FE331

Diagram No. 1215-4

NOAA FORM 76-35A

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE

DESCRIPTIVE REPORT

Type of Survey ..... Side Scan Sonar

Field No. HE-10-9-89

Registery No. FE-331SS

LOCALITY

State ..... New Jersey

General Locality ..... Atlantic Ocean

Sublocality ..... Monmouth Beach to Elberon

1989

CHIEF OF PARTY
LCDR S.R. Iwamoto

LIBRARY & ARCHIVES

DATE ..... July 12, 1991

☆U.S. GOV. PRINTING OFFICE: 1985—566-054

FE331

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NOAA FORM 77-28 (11-72)

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

HYDROGRAPHIC TITLE SHEET

REGISTER NO.

FE-331SS

INSTRUCTIONS - The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

FIELD NO.

HE-10-9-89

State New Jersey

General locality Atlantic Ocean

Locality Monmouth Beach to Elberon

Scale 1:10,000 Date of survey 4 Aug - 29 Aug 1989

Instructions dated 20 JUNE 1989 Project No. OPR-C147-HE-89

Vessel NOAA Ship HECK (S-591)

Chief of party LCDR S. R. Iwamoto

Surveyed by G. H. Tuell, H. W. Bonnah, L. D. Weiner, D. S. Wilkes, M. Sramek

Soundings taken by echo sounder, hand lead, ~~pole~~ Pneumatic Depth Gauge, EG&G Model 260 Side Scan Sonar

Graphic record scaled by GHT, HWB, LDW, DSW, MS

Graphic record checked by GHT, HWB, LDW, DSW, MS

Protracted by _____ Automated plot by Brunning Zeta Plotter XYNETICS 1201 Plotter

Verification by Atlantic Hydrographic Section personnel

Soundings in ~~fathoms~~ feet at ~~MLW~~ MLLW

REMARKS: Notes in the Descriptive Report were made in red during office processing.

AWOIS / SURF MSD 7/24/91

KWW 7-12-91

NOAA FORM 77-28 SUPERSEDES FORM C&GS-537.

☆ U.S. G.P.O. 1972-769-565/519 REG.#6

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APPENDICES

* DATA REMOVED FROM ORIGINAL DESCRIPTIVE REPORT AND FILED WITH FIELD RECORDS.

DESCRIPTIVE REPORT TO ACCOMPANY
SURVEY FE-331SS
FIELD NUMBER HE-10-9-89
NEW JERSEY
ATLANTIC OCEAN
OFFSHORE MONMOUTH BEACH TO ELBERON
Scale 1:10000
NOAA SHIP HECK S-591
LCDR Stanley R. Iwamoto, CMDG

A. PROJECT DESCRIPTION

A1. Project Authorization

This survey was conducted in accordance with Hydrographic Project Instructions OPR-C147-HE, Offshore New Jersey Coast, dated June 20, 1989.

A2. Project Purpose

In 1988, the NOAA Ship WHITING conducted basic hydrographic surveys and completed 200 percent side scan sonar coverage of the project area. Per instructions, WHITING did not investigate or resolve assigned items or new contacts at that time. The purpose of this project was to provide rapid resolution of all items noted for additional investigation.

B. PROJECT OVERVIEW

B1. General

This report includes the results of all contact investigations performed in order to resolve items originally identified by WHITING in survey H-10285. Survey H-10285 was reviewed by personnel at the Atlantic Hydrographic Section (N/CG244). Items to be addressed by HECK were specified in a memorandum from Mr. R.D. Sanocki to LCDR Maureen R. Kenny, dated May 15, 1989. This memorandum was forwarded to HECK as an attachment to the Project Instructions. All items listed in the memorandum were resolved by HECK during this survey. CONCUR

Horizontal control recovery and installation of navigation units began on June 27, 1989. Hydrographic survey operations began on August 04, 1989, and continued until August 29, 1989.

B2. METHODOLOGY

This survey was conducted according to procedures dictated in the Hydrographic Manual Fourth Edition; the Field Procedures Manual for Hydrographic Surveying; the Side Scan Sonar Manual; and the Hydrographic Guidelines.

Survey data acquisition and processing were accomplished utilizing the HDAPS system and the latest version of the NAVITRONIC NAVISOFT 300 software provided to the ship by N/CG24. The specific survey instrumentation utilized is discussed in Sections F through H of this text.

HECK chose to set up the HDAPS survey project parameters exactly as the WHITING had done. This decision allowed the HECK to survey in the same MTM coordinate system as WHITING.

The standard field survey procedure was to navigate to the coordinates provided by WHITING and to acquire fifty meter range scale imagery over the reported position of the contact. This imagery was compared against the photocopies of the 100 meter range scale images which had been provided as part of the project package. The 50 meter range scale images were obtained in order to provide a higher resolution view of the contact before making a decision as to the proper technique for resolving the item. The imagery was also used to refine the coordinates of the contact before conducting further work.

Contacts fell into one of three categories: diver investigation required for resolution; hydrographic development required for resolution; or insignificant contact requiring no further work. Generally, HECK chose to dive on any discrete point contact which appeared to be wreckage, localized rock outcrops, or small dredge spoils. Any broad shoal areas were resolved by hydrographic development.

Each contact was addressed individually and is discussed in section K of this text. Problems with the HDAPS system caused the loss of some digital hydrographic and side scan sonar data. However, all online analog records are submitted. The nature of the HDAPS problem is discussed fully in section I. The specific data in question are discussed in section K under the appropriate contact investigation report and are properly annotated on the Daily Abstracts enclosed in appendix III* Approval to submit the survey without some digital data was granted in a memorandum from the Chief, Atlantic Hydrographic Section, dated 24 August 1989.

* DATA REMOVED FROM ORIGINAL DESCRIPTIVE REPORT AND FILED WITH FIELD RECORDS.

C. AREA SURVEYED

This survey lies along the New Jersey coast between Monmouth Beach and Elberon. The offshore limit of the survey is approximately six miles east of the New Jersey coastline.

D. SURVEY VESSELS

All hydrographic and side scan sonar data were collected by the NOAA Ship HECK (EDPN 9140).

A 17 foot Boston Whaler skiff was used for installation and maintenance of MINI-RANGER shore stations and for general utility work.

A 23 foot SISU launch was used as a dive support boat. All diver least depths obtained by leadline or pneumofathometer were measured from this launch.

E. SURVEY SHEETS (FIELD SHEETS)

All survey sheets submitted in this report were generated using the Preplot Plotter Sheet utility of the Presurvey menu of the NAVISOFT 300 software on the HDAPS system. A Brunning 824 CS Plotter (S/N 15237) was used as the plotting device. All sheets are Modified Transverse Mercator projections and are plotted on the North American Datum of 1983 (NAD 83).

Two 1:10000 field survey sheets are submitted in this survey. Additionally, three 1:5000 scale hydrographic development smooth sheets are submitted. Each sheet is briefly described in the following text. See APPENDIX V, PROJECT and PLOTTER SHEET PARAMETERS, for the technical specifications on each sheet. DATA REMOVED FROM ORIGINAL DESCRIPTIVE REPORT AND FILED WITH FIELD RECORDS.

E1. HE-10-9-89W

This sheet is a 1:10000 plot oriented North-South. The sheet covers the western portion of the survey. Much of the side scan sonar imagery acquired on this sheet was affected by HDAPS data transfer problems. Therefore, only imagery covering contact 19 is shown on the smooth swathplot. Data acquired on the sheet are submitted on raw data tapes 21610, 22110, 22120, and 22610. Due to various formatting errors, data could not be retrieved from tapes 22110 and 22120 for editing. Data from these tapes was not smooth plotted. All smooth data are submitted on tapes 21620 and 22620.

Two copies of HE-10-9-89W are submitted:
- 1 field contact swath/trackplot on mylar
- 1 smooth contact swathplot on paper

E2. HE-10-9-89E

This sheet is a 1:10000 plot oriented North-South. The sheet covers the eastern portion of the survey. Contact 2 is the only contact surveyed on this sheet. Data acquired on this sheet are written to raw data tape 22710 and to smooth data tape 22720.

One copy of HE-10-9-89E is submitted:
- 1 field contact swathplot on mylar

E3. HE-5-9-89B

This sheet is a 1:5000 plot oriented East-West and is centered on contacts 13, and 21. The sheet was generated in order to show a reduced scale plot of the line spacing achieved over the surveyed area. Both of the contacts were surveyed using 25 meter line spacing hydrographic development. Data acquired on this sheet were originally surveyed on sheet HE 10-9-89 W and are submitted on raw data tape 22610 and smooth data tape 22620.

Two copies of HE-5-9-89B are submitted:
1 smooth trackplot on paper
1 smooth depthplot on paper

E4. HE-5-9-89C

This sheet is a 1:5000 plot oriented East-West and is centered on contacts 8,11, and 20. The sheet was generated in order to show a reduced scale plot of the line spacing achieved over the three contacts. Contacts 11 and 20 were resolved by hydrographic development. Hydrography was also acquired over contact 8, however, the contact was eventually resolved by diver investigation. Data acquired on this sheet were originally surveyed on sheet HE 10-9-89 W and are submitted on raw data tapes 21610 and 22610 and on smooth data tape 22620.

Two copies of HE-5-9-89C are submitted:
1 smooth trackplot on paper
1 smooth depthplot on paper

E5. HE-5-9-89D

This sheet is a 1:5000 plot oriented East-West and is centered on contact 2. The sheet was generated in order to show a reduced scale plot of the side scan sonar swath achieved over the contact. Contact 2 was resolved by diver investigation. Data acquired on this sheet were originally surveyed on sheet HE 10-9-89 E and are submitted on raw data tape 22710 and on smooth data tape 22720.

One copy of HE-5-9-89D is submitted:
1 smooth swathplot on paper

F SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS

F1. Raytheon DSF 6000N Echosounder

All hydrographic soundings for this survey were acquired using a Raytheon DSF echosounder. System performance was checked daily with an Electronic Depth Simulator Instrument (EDSI) provided by AMC's EEB. The daily tests were included as part of each day's raw data records.

Both low and high frequency depths were digitized, but only the high frequency depths were used for survey operations. The automatic gain function was utilized. Operations were conducted using both 40 and 80 range scale settings. The auto phase function was used. The digitizing gate was set at 10 percent of depth.

F2. EG&G Model 260 Side Scan Sonar

The HECK is equipped with an EG&G Model 260 slant corrected Side Scan Sonar recorder (S/N 0011443) and a model 272 dual frequency towfish (S/N 0011591).

Side scan equipment operation involves reeving the towfish cable through a fairlead block over the stern and towing the towfish astern at speeds of 2 to 5 knots. Fish height above the bottom is controlled by a combination of cable scope and ship's speed. The paper speed on the recorder is set manually. The operator must make frequent checks of vessel speed and adjust the paper speed as necessary. This procedure eliminates paper "speed jumps" caused by spikes in the navigation LOPs and insures that targets are depicted in their correct size and shape.

Side scan operations were conducted in accordance with the Side Scan Sonar Manual dated September 1988. Periodic confidence checks were performed by either towing the fish by a previously located contact, or by noting recognizable bottom characteristics at the edges of the sonar range scale in use. The side scan sonar system worked well for the duration of the survey.

F3. Leadline and Pneumofathometer

Due to a failure of the ship's pneumofathometer, two diver determined least depths were measured with a leadline (contacts 8 and 19). The leadline was constructed and used in accordance with Hydrographic Manual section AF.1.

The HECK's pneumofathometer is equipped with two precision depth gauges, a 0 - 70 FSW depth gauge and a 0 - 140 FSW gauge. The HECK's pneumofathometer was built and is operated according to procedures specified in Hydrographic Guideline 55. Both gauges were most recently calibrated 26 July 1989. Copies of these calibrations are provided in APPENDIX I.H.*

A pneumofathometer system check was conducted on 24 August 1989. This check showed that the system was operating within specified tolerances. The results of this check are included in Appendix I.H.*

Pneumofathometer least depths were obtained on contacts 2,9,12, and 17.

G CORRECTIONS TO ECHO SOUNDINGS

G1. Velocity Correctors

The following table shows the dates and locations that velocity correction data were obtained by making direct readings of sound velocity using the ODOM Digibar sound velocimeter:

DATE	LOCATION
~~7/13/89 (DOY 194)~~	~~40° 27' 12"N ; 73° 55' 00"W~~ NOT USED
7/27/89 (DOY 208)	40° 22' 30"N ; 73° 54' 48"W
8/23/89 (DOY 235)	40° 08' 30"N ; 73° 54' 00"W

The velocity cast data were reduced and velocity corrections calculated using program VELOCITY. The computed velocity correctors were then applied online to echosounder depths by entering the correction data into the HDAPS sound velocity table. Reference APPENDIX I.A, VELOCITY CORRECTION DATA,* for listings of the cast data and output from the VELOCITY software. HDAPS velocity table listings are also shown in APPENDIX I.A.* Velocity correctors were verified by conducting a dual leadline comparison of echosounder and leadline depths on DOY 194. Digital depths agreed with leadline depths within one half foot. Results of the comparison are included in APPENDIX I.C., LEADLINE COMPARISONS.*

* DATA REMOVED FROM ORIGINAL DESCRIPTIVE REPORT AND FILED WITH FIELD RECORDS.

G2. Tide Corrections

The tidal datum for this project is mean lower low water. The operating tide station at Sandy Hook, NJ will serve as control for datum determination. This station was also used for predicted tides. No tide stations were established by the HECK in support of this survey. Verification Third-order levels were conducted at the tide station on June 28, 1989 (DOY 179) and at the end of the project on August 31, 1989 (DOY 243).

All hydrographic and diver determined depths have been corrected for predicted tides. The tidal values were taken from Tide Tables 1989 High and Low Water Predictions, East Coast of North and South America. Correctors for time and height were taken from the project instructions.

Tidal correctors were applied online by entering the appropriate values into the HDAPS predicted tide tables. Three predicted tide tables were used. These tables are included in APPENDIX I.D., HDAPS PREDICTED TIDES TABLES.* APPROVED TIDES WERE APPLIED DURING OFFICE PROCESSING.
Hydrography collected during area surveys for contacts 13 and 21 on DOYs 226,227 and 229 exhibited depth discrepancies of as much as 6 feet when smooth plotted. HECK believed that variation from normal predicted tides caused the discrepancies. Conversation with personnel at Coast Guard Station / Shark River, Belmar, New Jersey, revealed that greater than average tidal ranges were experienced during this period. The HECK believes that application of approved tides will resolve the discrepancies.

A Request for Approved Tides was mailed to Chief, Sea and Water Levels Branch, on September 30, 1989. A copy of this letter is enclosed in Appendix I.E.*

G3. Settlement and Squat Correctors

Settlement and squat correctors for the HECK were determined on March 10, 1989 (DOY 69), at Craney Island fuel pier in Norfolk, Virginia. An observer was put ashore with a level instrument, and changes in relative height were measured as the ship passed by the observer while running at various speeds. (Reference APPENDIX I.F, SETTLEMENT AND SQUAT DATA)*

Settlement and squat values were applied online to hydrographic soundings by entering the observed values into the HDAPS offset table. A copy of this table is included in APPENDIX I.G, HDAPS OFFSET TABLE.*

*. DATA REMOVED FROM ORIGINAL DESCRIPTIVE REPORT AND FILED WITH FIELD RECORDS.

G4. Heave, Roll, Pitch Sensor and Correctors

Heave is measured by a Datawell B.V. (S/N 19110-C) heave, roll, and pitch sensor (HIPPY) located amidships near the transducer. The sensor gathers online data which is applied to the soundings in near real time. All data acquired in the echosounder mode have been corrected by applying HIPPY correctors.

G5. Vessel Draft Corrector

During a February 1988 drydock period, an exact measurement of 19.0 feet was taken from the DSF transducers to a fixed point on each bridge wing of the ship. After refloating the ship, the height above the waterline was determined for this point. The ship's static draft was calculated to be exactly 6.9 feet (2.10 meters).

This draft was applied online to hydrographic soundings by entering the value of 2.1 meters as the high frequency transducer height in the HDAPS offset table. See APPENDIX I.G, HDAPS OFFSET TABLE. DATA REMOVED FROM ORIGINAL DESCRIPTIVE REPORT AND FILED WITH FIELD RECORDS.

H. HORIZONTAL CONTROL SEE ALSO SECTION 2.9. OF THE EVALUATION REPORT.

H1. Survey Navigation

Vessel survey navigation was accomplished by the range-range method, utilizing the Motorola MINI-RANGER Falcon 484 system.

The MINI-RANGER system is interfaced to the HDAPS system in such a way that only the ranges and signal strengths are recorded; the position computation capability of the Falcon system is not utilized. Vessel position is computed by a least squares predictor/corrector algorithm within the NAVITRONIC NAVISOFT 300 software.

The hydrographer must specify each of three interactive parameters which "tune" the positioning algorithm. The following parameters were entered into the Offset Table :

1) acceleration limit ..... 0.2 meters second $^{-2}$

2) angle limit ..... 0.3 degrees second $^{-1}$

3) crabbing limit ..... 0.4 degrees

The algorithm simultaneously uses up to four electronic lines of position (LOPs). Additionally, the ship's gyro heading and speed are used to predict (dead reckon) a position. Whenever more than two acceptable LOPs are measured, the position computation is mathematically overdetermined. In order to utilize all available information, a least squares adjusted position is computed.

Three measures of the quality of this adjusted position are: the magnitude of the residuals on each range; the size and orientation of the error ellipse; and the radius of the 95% confidence error circle. HDAPS provides the hydrographer with a continuous graphic display of these data as well as a rough graphic of survey geometry. The required survey navigation positional accuracies are specified in terms of the maximum residual and the error circle radius. These requirements are stated in the Project Instructions.

Acceptable MINI-RANGER navigation system performance was verified by comparing individual range-range fixes to simultaneous sextant three-point-fixes. Critical systems checks were conducted on 29 June 1989 (DOY 149) and on 8 August 1989 (DOY 220). Non-critical navigation system checks were performed daily to insure that the instrumentation was functioning within specifications. The critical systems check data are included in APPENDIX II.E, RESULTS OF SURVEY NAVIGATION SYSTEMS CHECKS.*

Field Procedures Manual Memorandum #89-01, dated 08 August 1989, negated the requirement for sextant fixes when HDAPS is routinely operated in the multiple LOP mode and when positional accuracies are within specified tolerances. The HECK routinely conducted surveying operations using four MINI-RANGER LOPs, although occasionally one or more ranges were automatically rejected from the solution due to poor signal strength. At no time during this project did the maximum residual consistently exceed 0.5 mm at the survey scale (5 meters). The 95% confidence error circle radius very rarely exceeded 1.5 mm at the survey scale (15 meters).

A pre-project baseline calibration (BLC) of the MINI-RANGER system was conducted at Fentress Auxiliary Naval Airfield Base on January 31, 1989. A mid-season BLC was conducted at Port Jefferson, New York, on May 20, 1989. During these calibrations, the range correctors were determined for each combination of transponder and shipboard R/T and RPU. A minimum acceptable signal strength (MASS) was also determined for each transponder. All data in this survey utilized correctors determined during the Baseline Calibration of May 20, 1989. Reference APPENDIX II.B, MINI-RANGER BASELINE CALIBRATION DATA, for the results of this calibration.* BLC raw data, computations, and graphs are included in Electronic Control Report OPR-B660-HE-89, which is submitted under separate cover.

The range corrector and MASS for each MINI-RANGER code was entered into the HDAPS system using the Pre-Survey C-O Table Utility. This table provides the mechanism by which HDAPS automatically applies the proper range corrector and removes from the position computation those LOPs with signal strengths below MASS. A new C-O Table was generated each time any change was made to the navigation configuration. Reference APPENDIX II.C, HDAPS C-O TABLES* for the various C-O tables used during this survey.

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MINI-RANGER shore station installations were placed directly over Third Order Class I or better geodetic stations. Control station positions were entered into the HDAPS Control Station Tables using the Pre-Survey menu. (See APPENDIX II.A, LIST OF HORIZONTAL CONTROL STATIONS)* The appropriate MINI-RANGER codes were attached to the station number on this table. Each time the survey navigation configuration was altered, the control station table was modified so that it reflected the correct MINI-RANGER code placement. APPENDIX II.D, DAILY ABSTRACT OF HDAPS TABLES,* correlates control stations, MINI-RANGER codes, position numbers and dates of use. This information is available in more detail on the Daily Data Abstracts shown in appendix III.

H2. GEODETIC CONTROL SEE ALSO SECTION 2.a. OF THE EVALUATION REPORT.

The horizontal datum for this project is the North American Datum of 1983 (NAD 83). All stations were either established or recovered by WHITING with the exception of Rockaway Jetty Beacon which was recovered by HECK. A recovery for this station is included in a horizontal control report submitted under a separate cover. All coordinates were taken from WHITING's control station table except for Rockaway Jetty Beacon which was taken from the NGS Geodetic Control Data for New York.

I. AUTOMATED DATA PROCESSING

Hydrographic and side scan sonar data acquisition and processing were accomplished using the HDAPS hardware and the most recent version of the Navitronic NAVISOFT 300 software provided to the ship. This software is still under development and some problems do exist:

1) The positioning algorithm occasionally generates a "flyer" which causes the plotter sheet to scroll in an unpredictable manner. HECK personnel tried unsuccessfully to edit these "flyers" in the nightly processing. Therefore, the plotter continued to scroll even in the off-line data processing mode.

2) Coordinates for control stations are altered by the software after they have been entered. This problem is most likely caused by rounding errors in the GP > MTM > GP conversion process. The potential errors are quite small (decimeter). However, the reader must be aware that the error is introduced by the software and that the coordinates were originally entered correctly.

3) Data transfer problems sometimes created the necessity to reject data because the data could not be transferred to the hard disk from the raw data tape. This problem occurred whenever there was an abnormal interrupt of a survey line; the final data set number (DSN) was not written to the raw data tape. If this interrupt occurred, the entire line was irretrievable. One known

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source of this problem was the delay in writing HIPPY data to the tape. If the HDAPS system is taken off-line before waiting out the HIPPY delay, then the survey line cannot be written to the hard disk for editing. Not all such problems were caused by HIPPY delay. Occasionally data could not be transferred from the raw tape and the problem could not be identified.

4) Data logging problems were encountered with HDAPS on 08 August. No digital data were collected between 08 August and 11 August. On 12 August, the problem was found to be a loose connector in the cable connecting the tape unit to the computer. No further problems were encountered in logging digital data.

As a result of the data logging problems various amounts of side scan sonar and hydrographic data were not stored digitally. Most side scan sonar data on sheet HE 10-9-89W were not written to the raw data tape and ,therefore, could not be retrieved for editing. This situation was not considered serious with regard to side scan imagery because the field swathplots could be used to orient the images to the contacts. Further, the several lines of development hydrographic soundings that were lost digitally were rerun and successfully logged to data tape. The specific data effected by this problem are marked on the Daily Data Abstracts in Appendix III.* Data were lost on DOY 220 and 221.

DIGIBAR velocity cast data was processed on the ship's IBM-PC XT using program VELOCITY.

Geodetic computations were performed on the ship's IBM-PC XT using the MTEN ENHANCEMENTS routines which were obtained from the National Geodetic Survey

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J. **COMPARISON WITH CHARTS AND PRIOR SURVEYS** SEE ALSO SECTIONS 6.A AND 7. OF THE EVALUATION REPORT.

Hydrographic soundings from this survey were compared with the largest scale chart of the area.

NOS CHART 12326
FIRE ISLAND LIGHT TO SEA GIRT
1:80000
38TH ED 22FEB86

12324SC
SANDY HOOK TO LITTLE EGG HARBOR
1:40000
38TH ED 15NOV86

This survey was also compared against prior survey:

H-10285
OFFSHORE NJ COAST, NJ
1:10000
1988

The chart and prior survey comparisons were conducted by plotting the position of the contacts directly on the chart or survey. Specific details of the comparisons are discussed in section K of this report, under the item investigation report for each contact.

No dangers to navigation were reported to Coast Guard as a result of this survey. SEE ALSO SECTION 7.D. OF THE EVALUATION REPORT.

K. **CONTACT INVESTIGATION REPORTS** SEE ALSO SECTIONS 6.a. AND 7.a. OF THE EVALUATION REPORT.

Eleven contacts were investigated during this survey. The contact numbers are consistent with the numbering scheme used by WHITING during survey H-10285. Each item is discussed individually in the remaining text. Side scan sonar imagery covering each contact is abstracted on the target abstract for the individual contacts. (see appendix IV.)* The contact investigation reports are organized in the following manner:

* DATA REMOVED FROM ORIGINAL DESCRIPTIVE REPORT AND FILED WITH FIELD RECORDS.

1) Text describing the search area, search technique, and result of investigation

2) MTM to LAT-LONG conversion and tide corrector determination

3) Diver's sketch on contact of contact (if appropriate)

4) Photographic copy of fathometer image at time of detached position

5) Photographic copy of the SSS image obtained by the HECK

6) Photographic copy of the SSS image obtained by the WHITING

7) Dive operations summary (if appropriate)

CONTACT	STATUS	RECOMMENDATIONS
2 ✓	DR	~~WRECK, DANGER, 69 FT~~ NON-DANGEROUS SUBM OBSTR (690BSTR)
8 ✓	DR	ROCKS, 37 FT—(37RK)
9 ✓	DR	SUNKEN WRECK, 54 FT—(54WK)
11 ✓	HR	~~ROCKS, DANGER, 38 FT~~ CHART AS SHOWN ON PRESENT SURVEY.
12 ✓	DR	ROCK, 46 FT—(46RK)
13 ✓	HR	VARIOUS ROCKS, DANGER, ~~31~~ 33 FT—(33RK)
17 ✓	DR	ROCKS, 33 FT—(33RK)
19 ✓	DR	WRECK, ~~NOT DANGER,~~ 40 FT—(40WK)
20 ✓	HR	~~ROCKY REEF, DANGER, 37 FT~~ (40RK)
21 ✓	HR	VARIOUS ROCKS, DANGER, 21 FT—(24RK)
23	DR	INSIGNIFICANT, REMOVE ✓
		CHART~~ED FEATURE~~ SHOAL

KEY **HR**-HYDRO RESOLVED **DR**-DIVER RESOLVED

AWOIS #8096

K.1 INVESTIGATION REPORT FOR CONTACT #2

AREA OF INVESTIGATION :

State: New Jersey
County: Monmouth
Locality: 5 miles east of Elberon, NJ
Latitude: 40° 16' 29.386"
Longitude: 73° 52' 20.267"
Reported Depth: 70 feet (H-10285)

SURVEY PROCEDURES :

Positioning: Falcon MiniRanger
Side Scan Sonar Search: DOY 227, 241
Diver Investigations: DOY 241
Echo Sounder Investigation: none
Contacts: One (two locomotives side by side)

A 50 meter range scale SSS investigation was conducted over the coordinates provided by WHITING. The HECK first located the contact at position 1124.4F on DOY 227. A marker buoy was deployed at position 1356 on DOY 241. The Divers moved the buoy to the location of the least depth. Fix 1361 was taken as the HECK was maneuvered alongside the dive buoy.

DIVER INVESTIGATION SUMMARY : Divers LT(jg) Wilkes and Ens Weiner descended the marker buoy line to the bottom in approx. 85 feet of water. The divers swam NNW and located the contact 15 meters from the buoy. The divers visually located the highest point and moved the buoy to it. The least depth measurement was made by pneumofathometer.

CONTACT DESCRIPTION : Divers located the contact visually about 15 meters NNW from the marker buoy anchor. The contact was identified as two steam railroad locomotives resting upright, side by side, on the bottom. Both locomotives were covered with marine vegetation and coral. The shoalest point of the two locomotives was approx. 18 feet off of the bottom. The surrounding bottom was sand.

LEAST DEPTH DETERMINATION :

Date of measurement: 29 August 1989 (DOY 241)
Time (UTC): 15:42

Average pnumofatho. depth: 70.8 feet
~~PREDICTED~~ tidal corrector: -1.~~5~~4 feet

Least depth: 69.~~8~~4 feet
69.0 PLOTTED

POSITION DETERMINATION :

Fix number: 1361.~~0~~F
Number of LOP's: 3
Maximum residual: 2.7
Error circle radius: 6.1

Easting: 31609.1
Northing: 23109.5

Latitude: 040° 16' 29.16~~2~~1" N
Longitude: 073° 52' 20.~~246~~25" W

Loran-C Rates:	9960-W	9960-X	9960-Y	9960-Z
	===> NO LORAN, TRANSMITTER OFF THE AIR <===			

RECOMMENDATIONS : This contact is shown on prior survey H-10285 as a 70 ~~foot depth~~ OBSTR(A) and is located in an area of 78 foot soundings. The contact was listed in WHITING's contact abstract as "OBSTRUCTION" and was recommended for diver investigation.

Communication with local divers revealed that the locomotives were cargo from the transport ship Arundo. The Arundo was enroute to Europe with the locomotives when she was torpedoed and sunk by German U-Boat, U-297. However, the Loran-C coordinates of the wreck Arundo provided by the local divers plot 10.4 NM to the Southeast of fix 1361F.

The contact lies approximately 5 miles offshore and is halfway between the 60 foot and 90 foot depth contour. The contact is not charted.

The HECK recommends that the contact be charted as ~~a wreckage~~ * NON DANGEROUS SUBMERGED OBSTRUCTION with a known depth of 69 feet at the position determined in this survey. CONCUR (69OBSTR)
IT IS ALSO RECOMMENDED THAT THE 70 OBSTR(A) FROM H-10285 (1988) NOT BE CHARTED. SEE SHEET 1 OF 10.

AWOIS #1543

K.2 CONTACT INVESTIGATION REPORT FOR CONTACT #8

AREA OF INVESTIGATION :

State: New Jersey
County: Monmouth
Locality: 1.4 NM east of Long Branch, NJ
Latitude: 40° 18' 23.229"
Longitude: 73° 56' 33.079"
Reported Depth: 41 feet (H-10285)

SURVEY PROCEDURES :

Positioning: Falcon MiniRanger
Side Scan Sonar Search: DOY 220 (digital data lost)
Diver Investigations: DOY 229
Echo Sounder Investigation: DOY 227
Contacts: One

A 50 meter range scale SSS investigation was conducted over the coordinates provided by WHITING. HECK first located the contact at position 805F. An echo sounder development was conducted over the area of position 805 (the results of which are shown on sheet HE 5-9-89C). Because the contact appeared to be a localized shoal or rock outcrop, a diver investigation was conducted. A marker buoy was deployed at position 1211. Divers placed the buoy on the highest point. Fix 1213 was taken when the HECK was maneuvered alongside the dive buoy.

DIVER INVESTIGATION SUMMARY : ENS Weiner and ST Sramek descended the marker buoy to a rocky outcrop in approx. 44 feet of water. The visibility was good and allowed the divers to swim about the outcrop and find the least depth. The least depth was determined by leadline. ENS Weiner ascended with the leadline and made the measurement while ST Sramek held the weight at the highest point on the rock.

CONTACT DESCRIPTION : Divers located an area of rocks surrounding a rock outcrop which rose approx. 10 feet off of the bottom. The surrounding bottom was sand.

LEAST DEPTH DETERMINATION :

Date of measurement: 17 August 1989 (DOY 229)
Time (UTC): 18:20

Average leadline depth: ~~38.0~~ feet (diver determined)
~~PREDICTED~~ tidal corrector: ~~-1.3~~ -0.6 feet

Least depth: ~~36.7~~ 37.4 feet
37.0 PLOTTED

POSITION DETERMINATION :

Fix number: 1213 ~~.0F~~
Number of LOP's: 4
Maximum residual: 7.3
Error circle radius: 5.8

Easting: 25657.9
Northing: 26633.7

Latitude: 040° 18' 23.~~515~~52"
Longitude: 073° 56' 32.~~139~~14"

Loran-C Rates:	9960-W	9960-X	9960-Y	9960-Z
	15502.4	26938.1	43615.9	59819.8

RECOMMENDATIONS : This contact is shown on prior survey H-10285 as a 41 ~~foot depth~~. OBSTR(A) The contact was listed in the WHITING's contact abstract as "WRECKAGE-AWOIS 1543" and was recommended for diver investigation. The echosounder development specified in the Project Instructions is shown on survey sheet HE-5-8-89C.

The text from AWOIS 1543 states that the obstruction was originally located in 1939 and was "evidently wreckage." No evidence of wreckage was found in the search area. The contact investigated by HECK is about 3 feet deeper than the AWOIS item and was found to be a rock outcrop. Due to the steep face of the rock outcrop, the contact could have been mistaken as wreckage by the 1939 survey party. A positive resolution of the AWOIS item was not made, but HECK believes that contact 8 is AWOIS item 1543.

The ~~contact~~* lies approximately 1.5 miles offshore and is 0.75 miles west of the 60 foot depth contour. The ~~contact~~* is charted as an obstruction with a danger circle, cleared by wire drag.

*AWOIS Item

~~The HECK recommends that the contact be charted as a shoal sounding on isolated rocks, with a known depth of 37 feet. The sounding should be charted at the position determined in this survey.~~ SEE SECTION 6.9.3) OF THE EVALUATION REPORT. SEE SHEET 2 OF 10.

AWOIS #1531

K.3 INVESTIGATION REPORT FOR CONTACT #9

AREA OF INVESTIGATION :

State: New Jersey
County: Monmouth
Locality: 2 miles east of Elberon, NJ
Latitude: 40° 16' 07.913"
Longitude: 73° 56' 35.198"
Reported Depth: 55 feet (H-10285)

SURVEY PROCEDURES :

Positioning: Falcon MiniRanger
Side Scan Sonar Search: DOY 221 (digital data lost)
Diver Investigations: DOY 222
Echo Sounder Investigation: none
Contacts: One

A 50 meter range scale SSS investigation was conducted over the coordinates provided by WHITING. The HECK first located the contact at position 828.0S. A marker buoy was deployed at position 854. Divers then investigated the contact and determined the least depth. A buoy was anchored on a short scope at the location of the least depth. Position 857F was taken as the HECK was maneuvered alongside the dive buoy.

DIVER INVESTIGATION SUMMARY : ENS Bonnah and ST Sramek descended the marker buoy line to the bottom in approximately 64 feet of water. The visibility was 6 feet or less and dictated that the divers swim a 30 meter circle search. The divers located the contact visually and moved the marker buoy to the high point. The least depth was determined the second dive and was measured by pneumofathometer.

CONTACT DESCRIPTION : Divers located the remains of a large sunken wooden ship. The ship appeared to have settled keel down and to one side. Only one sheer strake running 40 meters long and some deck planks were exposed. The majority of the ship was buried in the sand. Current scour along the outboard side of the wreck accounted for the divers maximum depth of 64 feet. The shoalest point rose approx. 3 feet off of the bottom. The surrounding bottom was sand.

LEAST DEPTH DETERMINATION :

Date of measurement: 10 August 1989 (DOY 222)
Time (UTC): 15:03

Average pnumofatho. depth: 56.8 feet
PREDICTED tidal corrector: -2.48 feet

Least depth: 54.~~4~~ 0 feet
54.0 PLOTTED

POSITION DETERMINATION :

Fix number: 857 ~~OF~~
Number of LOP's: 4
Maximum residual: 2.7
Error circle radius: 6.3

Easting: 25610.1
Northing: 22469.4

Latitude: 040° 16' 08.50~~3~~" N
Longitude: 073° 56' 34.~~178~~ 18" W

Loran-C Rates:	9960-W	9960-X	9960-Y	9960-Z
	15503.4	26931.8	43592.8	59809.8

RECOMMENDATIONS : This contact is located on prior survey H-10285 ~~in an area of 57 foot depth.~~ SHOWN AS 55 OBSTR(D) Shoaler depths of 53 feet are shown Two tenths of a mile west on survey H-10285. The contact was listed in the WHITING's contact abstract as "WRECKAGE-AWOIS 1531" and was recommended for diver investigation.

The text of AWOIS item 1531 states that the wreck was located by wire drag in 1939. This text speculates that the contact was a wreck and implies that the wreckage was metal because it rust on the sounding lead. The HECK's divers found the very deteriorated remains of a wooden vessel, however, any metal once present may have collapsed into the wreckage and may be buried. A positive resolution of the AWOIS item was not made, but the HECK agrees with the WHITING that this wreck is probably AWOIS 1531. CONCUR

The ~~contact~~* lies approximately 2 miles offshore and is immediately west of the 60 foot depth contour. The ~~contact~~ is charted as a wreck, cleared by wire to a depth of 42 feet.

* AWOIS ITEM

~~The HECK recommends that the contact be charted as a sunken wreck with a known depth of 54 feet. The wreck should be charted at the coordinates determined in this survey.~~ SEE SECTION 6.a.1) OF THE EVALUATION REPORT. SEE SHEET 3 OF 10.

K.4 INVESTIGATION REPORT FOR CONTACT #11

AREA OF INVESTIGATION:

State: New Jersey
County: Monmouth
Locality: 1.4 MN east of Long Branch, New Jersey
Latitude: 40° 18' 19.842" N
Longitude: 73° 56' 43.154" W
Reported Depth: 41 feet (H-10285)

SURVEY PROCEDURES:

Positioning:	Falcon Mini Ranger
Side Scan Sonar Search:	DOY: 220 (digital data lost)
Hydrographic Investigation:	DOY: 227
Contacts:	ONE

The overall dimensions of contact 11 made diver investigation an impractical technique for determining the least depth. The side scan sonar gave excellent qualitative bottom characteristic information revealing an extensive shoal. Therefore this item was resolved by running a series of development hydrographic sounding lines over the 41 foot shoal delineated by the WHITING. Line spacing of 25 meters was achieved and results are shown on the 1:5000 scale plot HE-5-9-89C.

CONTACT DESCRIPTION: The side scan sonar record reveals that the contact is a rocky shoal area approximately 160 meters long by 40 meters wide. The contact is probably made up of rock typical of other contacts that HECK personnel investigated in the area. The most significant sounding was found at position 1093.15F.

LEAST DEPTH DETERMINATION: The ~~least~~ depth was determined by echosounder.

Date of measurement: 15 August 1989 (DOY 227)
Time of measurement: 16:~~08~~ 29 GMT

Echosounder depth:	32.~~X~~5
Velocity corrector:	~~1.2~~ 1.4
Draft corrector:	~~6.9~~ 7.1
Predicted tidal corrector:	~~-2.9~~ -0.4
Heave	-0.3
Least Depth	~~38.2~~ ~~40.2~~ 40.2 Plotted 40.0

POSITION DETERMINATION:

Fix number: ~~1093~~ 1143+4
Number of LOPs: 3
ECR: *
MAX RES: 2.2

Easting: ~~25428.0~~
Northing: ~~23.24~~

Latitude: 40° 18' ~~20.414"~~ N
Longitude: 73° 56' ~~41.875"~~ W

RECOMMENDATIONS: Contact 11 is shown on prior survey H-10285 as a ~~shoal sounding of 41 feet.~~ 41 OBSTR (A) Surrounding depths range from 42 feet to 49 feet on survey H-10285. The contact was listed in the WHITING's contact abstract as "DUMPSITE" and was recommended for echosounder development or diver least depth. The HECK chose echosounder development.

The contact lies approximately 1.4 miles offshore and is 0.8 miles west of the 60 foot depth contour. While contact 11 is not presently charted, it does however, lie between a charted depth of 40 feet and an obstruction cleared by wire drag to 34 feet. The obstruction is addressed as contact 8 in this survey (reference section K.2 of this text). CONCUR

~~HECK recommends that the contact be charted as a shoal sounding on isolated rocks with a known depth of 38 feet. The rocks should be charted at the position determined in this survey.~~
IT IS RECOMMENDED THAT THE AREA BE CHARTED AS SHOWN ON THE PRESENT SURVEY AND SUPERSED PRIOR SURVEY H-10285 (1988) WITHIN THE COMMON AREA. See sheet 4 of 10.

AWOIS # 1538

K.5 INVESTIGATION REPORT FOR CONTACT #12

AREA OF INVESTIGATION :

State: New Jersey
County: Monmouth
Locality: 1.4 miles east of West End, NJ
Latitude: 40° 16' 58.406"
Longitude: 73° 56' 49.616"
Reported Depth: 47 feet (H-10285)

SURVEY PROCEDURES :

Positioning: Falcon MiniRanger
Side Scan Sonar Search: DOY 221 (digital data lost)
Diver Investigations: DOY 221
Echo Sounder Investigation: DOY 221 (digital data lost)
Contacts: One

A 50 meter range scale SSS investigation was conducted over the coordinates provided by WHITING. The HECK first located the contact at position 824.6P. A marker buoy was deployed at position 827. Divers investigated the contact and determined the least depth. A buoy was anchored on a short scope at the location of the least depth. Position 837F was used as the location of the contact.

DIVER INVESTIGATION SUMMARY :LT Tuell and ENS Weiner descended the marker buoy line to the bottom in about 60 feet of water. The visibility was fair (10-12 feet). A large rock point was located nearby and the buoy anchor was moved to that location. A 30 meter circle search was performed which located the shoalest point in the area. The least depth was determined by pneumofathometer.

CONTACT DESCRIPTION : Divers located a large rock that was covered with coral and other sea life. The rock was covered with hundreds of lead fishing weights. The surrounding bottom was sand. The rock has a very steep north face and at that point rises about 8 feet off of the bottom.

LEAST DEPTH DETERMINATION :

Date of measurement: 09 August 1989 (DOY 221)
Time (UTC): 18:05

Average pnumofatho. depth: 50.6 feet
PREDICTED tidal corrector: ~~-4.4~~ -4.2 feet

Least depth: ~~46.2~~ 46.4 feet
46.4 PLOTTED

POSITION DETERMINATION :

Fix number: 837
Number of LOP's: 4
Maximum residual: 1.8
Error circle radius: 6.5

Easting: 25252.5
Northing: 24016.6

Latitude: 040° 16' 58.~~666~~67"
Longitude: 073° 56' 49.31"

Loran-C Rates:	9960-W	9960-X	9960-Y	9960-Z
	15504.4	26935.9	43601.2	59813.1

RECOMMENDATIONS : This contact is shown on prior survey H-10285 as a 47 ~~foot depth.~~ (OBSTR(A)) The contact was listed in the contact abstract as "DUMPSITE-AWOIS 1538" and was recommended for diver investigation.

The text for AWOIS item 1538 suggests that the contact was wreckage. The HECK's divers located a large coral covered rock. A positive resolution of the AWOIS item was not possible, however, HECK believes that contact 12 is the same item located by the 1939 survey party.

The AWOIS ITEM ~~contact~~ lies approximately 1.5 miles offshore and is 0.3 miles west of the 60 foot depth contour. It is charted as a wreck, cleared by wire to a depth of 42 feet. This wreck is evidently AWOIS item 1538. The contact is obviously well known to the local fishing fleet due to the large amount of fishing gear lying about the ~~wreck~~ rock.

~~The HECK recommends that the contact be charted as a shoal sounding on isolated rocks, dangerous to navigation, with a least depth of 46 feet. The symbol should be charted at the position determined in this survey.~~ SEE ALSO SECTION 6.a.2) OF THE EVALUATION REPORT. SEE SHEET 5 OF 10.

K.6 INVESTIGATION REPORT FOR CONTACT #13

AREA OF INVESTIGATION:

State: New Jersey
County: Monmouth
Locality: 0.8 NM east of West End, New Jersey
Latitude: 40° 17' 08.752" N
Longitude: 73° 57' 49.384" W
Reported Depth: 40 feet (H-10285)

SURVEY PROCEDURES:

Positioning:	Falcon Mini Ranger
Side Scan Sonar Search:	none undertaken
Hydrographic Investigation:	DOY 226,227
Contacts:	Ten

This item was resolved by running a series of development hydrographic sounding lines over the contact area outlined in the project instructions. The boundary the area survey is defined by the following corners:

	Latitude	Longitude
a.	40-17-15 N	73-58-14 W
b.	40-17-15 N	73-57-44 W
c.	40-17-02 N	73-57-44 W
d.	40-17-02 N	73-58-14 W

Line spacing of 25 meters was achieved and results are shown on the 1:5000 scale plot HE-5-9-89B.

CONTACT DESCRIPTION: The hydrographic development of this contact area revealed ten significant shoal soundings. The shoal soundings are most probably rock pinnacles typical of other contacts HECK personnel investigated in the area.
A shoal area is described and plotted by shoal sounding fixes:

FIX	DEPTH
882 ~~3 15F~~	~~33'~~ 34
886 t5 F	~~32'~~ 33
889 t2 F	~~32'~~ 33
901 ~~t4 35F~~	~~32'~~ 33
905 t3 F	~~33'~~ 34
1043 t6 ~~5~~ F	~~31'~~ 34 ~~(LEAST DEPTH)~~

The above described shoal area is located in the southwest corner of the contact area. Four other discrete point shoal soundings were noted and plotted at locations:

FIX	DEPTH
876 t3 F	~~35'~~ 36
877 ~~,0~~ F	~~35'~~ 36
899 ~~t6 52F~~	~~32'~~ 33
917 t7 F	35'

LEAST DEPTH DETERMINATION: All soundings including the least depth were determined by echosounder.

Date of measurement: DOY 227
Time of measurement: 13:58 GMT

Fathometer depth:	~~27.1~~24.4
Velocity corrector:	1.0 1.0
Draft corrector:	~~6.9~~ 7.1
~~Predicted~~ tidal corrector:	~~-4.8~~ -0.8
Heave	~~0.8~~ 1.1
Least Depth	~~31.0~~ 32.8

33.0 PLOTTED

POSITION DETERMINATION:

Fix number	9014 ~~1043.65F~~
Number of LOPs	:3
ECR	:*
MAX RES	:0.3

Easting: 23447.2
Northing: 24217.7

Latitude: 40° 17' ~~05.181~~ 03.80" N
Longitude: 73° 58' ~~05.738~~ 07.03" W

RECOMMENDATIONS: Charted depths within or near the survey boundaries of contact 13 range from 38 to 43 feet (by inspection of NOS chart 12324). Prior survey H-10285 depicts a shoal area within the boundaries of the contact 13 development area specified for this survey. The shoalest depth shown on prior survey H-10285 is 33 feet compared to ~~31~~ 33 feet determined in this survey.

The contact area lies approximately 0.8 miles offshore. No contacts discovered within the contact area are charted. The HECK witnessed considerable commercial traffic in the area, the largest of which were tugs running along the New Jersey shore. However, no vessels of 31 foot draft or deeper were observed.

~~HECK recommends that the shoal area discussed above be charted as a rocky reef, covered at sounding datum with least depth of 31 feet at position 1043.65F. Also, the four discrete point shoal soundings listed above should be charted as rocks, dangerous to surface navigation, with their respective known depths. All rocks should be charted at the positions determined in this survey.~~ IT IS RECOMMENDED THAT THE AREA BE CHARTED AS SHOWN ON ON PRESENT SURVEY AND SUPERSEDE PRIOR SURVEY H-10285 (1988) WITHIN THE COMMON AREA. SEE SHEET 6 OF 10.

K 7.0 INVESTIGATION REPORT FOR CONTACT #17

AREA OF INVESTIGATION :

State: New Jersey
County: Monmouth
Locality: 0.4 NM east of Long Branch, NJ
Latitude: 40° 17' 56.176"
Longitude: 73° 58' 05.197"
Reported Depth: 33 feet (H-10285)

SURVEY PROCEDURES :

Positioning: Falcon MiniRanger
Side Scan Sonar Search: DOY 220 (digital data lost)
Diver Investigations: DOY 222
Echo Sounder Investigation: none
Contacts: One

A 50 meter range scale SSS investigation was conducted over the coordinates provided by WHITING. The HECK first located the contact at position 810.36P. A marker buoy was deployed at position 855. Divers investigated the contact and determined the least depth. The marker buoy was relocated on a short scope at the location of the least depth. Fix 860.0F was taken as the HECK was maneuvered alongside the dive buoy.

DIVER INVESTIGATION SUMMARY : LT Tuell and ENS Weiner descended the marker buoy to a rocky outcrop in approx. 30 feet of water. The visibility was good and allowed the divers to swim about the outcrop using a combination of sight and the tagline to find the least depth. A 10 meter circle search was performed at the visual least depth to assure that shoaler points were not missed. The least depth was determined by pnumofathometer.

CONTACT DESCRIPTION : Divers located an area of rocks surrounding a rock outcrop which rose approx. 3 feet off of the bottom. The surrounding bottom was sand.

LEAST DEPTH DETERMINATION :

Date of measurement: 10 August 1989 (DOY 222)
Time (UTC): 16:55

Average pnumofatho depth: 37.~~2~~ 1 feet
~~PREDICTED~~ tidal corrector: -3.~~2~~8 feet

Least depth: 33.3 feet
33.0 PLOTTED

POSITION DETERMINATION :

Fix number: 860 ~~.OF~~
Number of LOP's: 4
Maximum residual: 3.2
Error circle radius: 9.0

Easting: 23454.6
Northing: 25790.2

Latitude: 040° 17' 56.16~~3~~"
Longitude: 073° 58' 05.~~438~~ 44"

Loran-C Rates:	9960-W	9960-X	9960-Y	9960-Z
		NOTE: NO LORAN-C RECORDED		

RECOMMENDATIONS : This contact is shown on prior survey H-10285 as a 33 ~~foot depth.~~ OBSTR(A). The contact was listed in the contact abstract as "OBSTRUCTION" and was recommended for diver investigation.

The contact lies approximately 0.4 miles offshore. The contact is not charted, however it is located 0.2 NM SSW of a charted 30 foot shoal area enclosed by a depth contour. The nearest charted depth is 33 feet.

The HECK recommends that the contact be charted as a ~~shoal sounding on isolated~~ rock~~s~~, with a known depth of 33 feet.* The sounding should be charted at the position determined in this survey. * (33RK) AND A DANGER CURVE. IT IS ALSO RECOMMENDED THAT THE 33 OBSTR(A) FROM H-10285 (1988) NOT BE CHARTED. SEE SHEET 7 OF 10.

AWOIS #8097

K 8.0 INVESTIGATION REPORT FOR CONTACT 19

AREA OF INVESTIGATION :

State: New Jersey
County: Monmouth
Locality: 1.4 NM east of North Long Branch, NJ
Latitude: 40° 19' 29.062"
Longitude: 73° 57' 01.940"
Reported Depth: ~~43~~ 42 feet (H-10285)

SURVEY PROCEDURES :

Positioning: Falcon MiniRanger
Side Scan Sonar Search: DOY 216
Diver Investigations: DOY 216
Echo Sounder Investigation: DOY 216
Contacts: One

A 50 meter range scale SSS investigation was conducted over the coordinates provided by WHITING. The HECK first located the contact at position 793.6S. A marker buoy was deployed at position 795. Divers investigated the contact and determined the least depth. A buoy was anchored on a short scope at the location of the least depth. Position 797F was used as the location of the contact.

DIVER INVESTIGATION SUMMARY : ENS Weiner and ST Sramek descended the marker buoy to the bottom in approx. 55 feet of water. The visibility was poor and mandated a tagline circle search. A 30 meter circle search was performed during which an overturned, 50 foot (LOA) steel hulled boat was located. The least depth was determined by leadline. ENS Weiner ascended with the leadline and made the measurement while ST Sramek held the weight at the highest point on the keel of the wreck.

CONTACT DESCRIPTION : Divers located an overturned, 50 foot (LOA)steel hulled boat which rose approx. 5 feet off of the bottom. The surrounding bottom was sand.

LEAST DEPTH DETERMINATION :

Date of measurement: 04 August 1989 (DOY 216)
Time (UTC): 14:40

Average leadline depth: 45.0 feet
~~PREDICTED~~ tidal corrector: ~~4.6~~ 5.0 feet

Least depth: 40.~~4~~0 feet
40.0 PLOTTED

POSITION DETERMINATION :

Fix number: 797 ~~OF~~
Number of LOP's: 4
Maximum residual: 3.1
Error circle radius: 7.7

Easting: 24961.9
Northing: 28652.9

Latitude: 040° 19' 28.98~~0~~"
Longitude: 073° 57' 01.61~~4~~"

Loran-C Rates:	9960-W	9960-X	9960-Y	9960-Z
	15504.1	26943.8	43627.3	59824.3

RECOMMENDATIONS : This contact is in approximately 4~~0~~2 feet of water* on prior survey H-10285. The contact was listed in the contact abstract as an "OBSTRUCTION" and was recommended for diver investigation or echosounder development. * AND SHOWN AS A 42 OBSTR (A)

The contact lies approximately 1.0 mile offshore and is midway between the 30 and 60 foot depth contour curves. The contact is not charted.

The HECK recommends that the contact be charted as a wreck, with a known depth of 40 feet** The wreck should be charted at the position determined in this survey. ** AND A DANGER CURVE.

IT IS ALSO RECOMMENDED THAT THE 42 OBSTR (A) FROM H-10285 (1988) NOT BE CHARTED. SEE SHEET 8 OF 10.

~~AWOIS~~
~~#4291~~
Deleted as AWOIS item 1/23/91
GKH

K.9 INVESTIGATION REPORT FOR CONTACT #20

AREA OF INVESTIGATION:

State:	New Jersey
County:	Monmouth
Locality:	1.2 NM east of Long Branch, New Jersey
Latitude:	40° 18' 18.179" N
Longitude:	73° 56' 55.223" W
Reported Depth:	~~36~~ 37 feet

SURVEY PROCEDURES:

Positioning:	Falcon Mini Ranger
Side Scan Sonar Search:	DOY 220 (digital data lost)
Hydrographic Investigation:	DOY 227,229
Contacts:	EIGHT

This item was resolved by running a series of development hydrographic sounding lines over the shoal area defined by the HECK's side scan records (fixes 800 - 802). Line spacing of 20 meters was achieved and results are shown on the 1:5000 scale plot HE-5-9-89C.

CONTACT DESCRIPTION: The side scan sonar record reveals that contact 20 is a shoal area approximately 240 meters long by 55 meters wide. The contact is probably made up of rock typical of other contacts HECK personnel investigated in the area. Hydrographic development of this contact revealed eight significant shoal soundings:

FIX	DEPTH
1074.1	~~38~~ 41
1079.4	~~39~~ 41
1079.6	4~~0~~~~3~~7 <====LEAST DEPTH
1081.2	~~38~~ 41
1084.0	~~3~~7 4~~0~~
1086.6	~~38~~ 41
1090.0	~~38~~ 41
1209.5	~~39~~ 41

The shoal soundings coincide with the contact revealed by the side scan records and delineate a shoal area. The position of least depth is at fix 1079.6F.

LEAST DEPTH DETERMINATION: The ~~least~~ depth was determined by echosounder.

Date of measurement: DOY 227
Time of measurement: 15:45 GMT

Fathometer depth:	32.0
Velocity corrector:	1.4
Draft corrector:	~~6.9~~ 7.1
Predicted tidal corrector:	~~3.4~~ 0.8
Heave	0.2
Least Depth	~~37.1~~ 39.9
	40.0 PLOTTED

POSITION DETERMINATION:

Fix number	:1079~~6~~F
Number of LOPs	:3
ECR	:*
MAX RES	:2.3

Easting: 25106.2
Northing: 26401.3

Latitude: 40° 18' ~~15.781~~ 16.00" N
Longitude: 73° 56' 55.~~503~~ 51" W

RECOMMENDATIONS: Contact 20 is located adjacent to a charted submerged rock, not dangerous to surface navigation, with a known depth of 40 feet. Contact 20 is shown on prior survey H-10285 as a ~~sounding of 36 feet~~ 37.0 SR (A). The contact is listed in the WHITING's contact abstract as "ROCK-AWOIS 4291" and recommended for diver least depth or echosounder development.

The text of AWOIS 4291 states that a 40 foot sounding was obtained on rocks during the 1939 survey. Side scan imagery obtained in this survey verifies that there is a rock outcrop in this area. AWOIS 4291 is probably the source of the charted 40 foot rock, and contact 20 is most probably the same rock outcrop located by the 1939 survey party.

~~HECK recommends that the shoal area discussed above be charted as a rocky reef, covered at sounding datum with least depth of 37 feet at position 1079.6F. The rock charted as 40 feet (AWOIS 4291) should be deleted from the charts.~~ SEE ALSO SECTION 6.9.6) OF THE EVALUATION REPORT. SEE SHEET 4 OF 10.

AWOIS #4288 4289 Deleted as AWOIS item 7/23/91 GKH

K.10 INVESTIGATION REPORT FOR CONTACT #21

AREA OF INVESTIGATION:

State: New Jersey
County: Monmouth
Locality: 0.5 NM east of West End, New Jersey
Latitude: 40° 16' 35.553" N
Longitude: 73° 58' 13.281" W
Reported Depth: 32 feet (H-10285)

SURVEY PROCEDURES:

Positioning:	Falcon Mini Ranger
Side Scan Sonar Search:	none undertaken
Hydrographic Investigation:	DOY 221(digital lost data), 226, 227, 229
Contacts:	One shoal area, and numerous isolated shoal soundings.

This item was resolved by running a series of development hydrographic sounding lines over the contact area outlined in this survey's instructions. The coordinates for contact area 21 were...

	Latitude	Longitude
a.	40-16-54 N	73-58-38 W
b.	40-16-54 N	73-57-56 W
c.	40-16-34 N	73-57-56 W
d.	40-16-34 N	73-58-38 W

Line spacing of 25 meters was achieved and results are shown on the 1:5000 scale plot HE-5-9-89B.

CONTACT DESCRIPTION: The hydrographic development of this contact area revealed many significant shoal soundings which are most probably rock pinnacles typical of other contacts HECK personnel investigated in the area. The largest and most critical of the shoals is located on the western half of the area surveyed and rises as much as 13 feet above surrounding depths. It measures about 280 meters long and 180 meters wide. The most critical sounding was obtained at position 1051.5F at a depth of 24~~21~~ feet. Several other discrete point shoal soundings were noted and plotted on sheet HE-5-9-89B.

LEAST DEPTH DETERMINATION: All soundings were determined by echosounder.

Date of measurement: DOY 227
Time of measurement: 14:25 GMT

Fathometer depth:	18.5
Velocity corrector:	0.8
Draft corrector:	~~6.9~~ 7.1
~~Predicted~~ tidal corrector:	~~-4.5~~ -1.6
Heave	-0.2
----------	----------
~~Least~~ Depth	~~21.5~~ 24.6
	24.0 PLOTTED

POSITION DETERMINATION:

Fix number	:1051~~+5~~F
Number of LOPs	:3
ECR	:*
MAX RES	:0.3

Easting: 22934.0
Northing: 23575.6

Latitude: 40^{o} 16' 44.~~357~~38" N
Longitude: 73^{o} 58' 27.~~456~~46" W

RECOMMENDATIONS: Charted depths within or near the survey boundaries of contact 21 range from a rock, cleared by wire drag to 24 feet (located at the northeast corner of the survey area), to 39 feet (by inspection of NOS chart 12324). The shoalest depth on prior survey H-10285 which falls within a specified development area is ~~25~~ 26 feet.

Two AWOIS items fell within the search area: 4288 and 4289. Both items were cleared by wire drag at 24 feet during the survey of 1939. These two AWOIS items are plotted on the smooth depth submitted on sheet HE 5-9-89B>

A ~~25~~ 31 foot sounding was obtained about ~~125~~ 89 meters southwest of AWOIS item 4288 at position 101~~3.25~~4.2F. This sounding is most probably the contact located by the 1939 survey party.

A ~~26~~ 28 foot sounding was obtained about ~~25~~ 23 meters southwest of AWOIS item 4289 at position 1196~~.45~~.5F. This shoal is probably the contact located by the survey party.

The area covered by this hydrographic development is not accurately charted. There are numerous pinnacle rocks within the area which are shoaler than 30 feet. ~~HECK recommends that the 21 foot sounding located at position 1051.5F be charted and that a 30 foot contour delineating the surrounding shoal area be drawn on the chart.~~ SEE ALSO SECTIONS 6.9.4) AND 6.9.5) OF THE EVALUATION REPORT. SEE SHEET 9 OF 10.

AWOIS #1537

K.11.0 INVESTIGATION REPORT FOR CONTACT #23

AREA OF INVESTIGATION :

State: New Jersey
County: Monmouth
Locality: 1.9 NM east of West End, NJ
Latitude: 40° 17' 01.968"
Longitude: 73° 56' 26.539"
Reported Depth: ~~56~~ 57 feet (H-10285)

SURVEY PROCEDURES :

Positioning: Falcon MiniRanger
Side Scan Sonar Search: DOY 221 (digital data lost)
Diver Investigations: DOY 222
Echo Sounder Investigation: DOY 221,222,227
Contacts: none
Fixes: 831-836, 859, 1119-1124

A 50 meter range scale SSS investigation was conducted over the coordinates provided by WHITING. The HECK did not locate the contact. Divers investigated what appeared to be the contact (fix 831.45P) but found nothing of significance.

DIVER INVESTIGATION SUMMARY : LT Tuell and ENS Weiner descended the marker buoy to the bottom in approx. 70 feet of water. Divers deployed a 30 meter tag line and performed a circle search. A few small rocks were located (1-2 foot height), but were considered insignificant. Divers did note, however, that the bottom consisted of a variety of textures ranging from soft sand to hard rock.

CONTACT DESCRIPTION: Side scan imagery acquired by the HECK shows a linear object which might be wreckage. However, no height above the bottom is visible on the image. Divers were unable to locate any significant protrusions above the bottom. The contact is insignificant. CONCUR

LEAST DEPTH DETERMINATION: None found

POSITION DETERMINATION: None taken

RECOMMENDATIONS : The ~~contact~~ AWOIS ITEM is presently charted as a wreck cleared by wire drag to 45 feet. The HECK found no evidence of significant height above the bottom on this contact. ~~HECK recommends that AWOIS item 1537 be resolved as insignificant and that the wreck symbol by removed from the chart~~. OVER

IT IS RECOMMENDED THAT THE AREA BE CHARTED AS SHOWN ON PRESENT SURVEY. IT IS ALSO RECOMMENDED THAT THE 57 OBSTR (A) FROM H-10285 (1988) NOT BE CHARTED. DURING OFFICE PROCESSING IT WAS DETERMINED THAT CONTACT #23, 57 OBSTR (A) FROM H-10285 (1988) DOES NOT EXIST WITHIN THE 100 METER SEARCH RADIUS REQUIRED IN AWOIS LISTING ON AWOIS ITEM #1537. AS STATED IN THE EVALUATION REPORT FOR H-10285 (1988) IT IS RECOMMENDED THAT AWOIS ITEM #1537 BE REMOVED FROM THE CHART. SEE SHEET 10 OF 10.

HORIZONTAL CONTROL STATIONS

STAT #	NAME	LAT	LON
001	AMBROSE LT ECC	40-27-35.263	73-49-49.999
~~002~~	~~SANDY HOOK LT ECC~~	~~40-27-42.189~~	~~74-00-07.226~~
~~003~~	~~SPERMACETTI COVE C-G CUPOLA~~	~~40-25-36.085~~	~~73-59-03.266~~
004	SEA CLUB 2	40-21-55.966	73-58-22.996
007	SHORES	40-19-42.745	73-58-27.912
009	OCCOVE	40-16-48.873	73-58-59.989
012	ASBURY T~~OWERS~~	40-13-43.310	73-59-53.482
016	BELFISH	40-11-08.351	74-00-34.846
019	GIRTY	40-08-11.868	74-01-38.854
~~022~~	~~NAVISINK LIGHT NORTH~~	~~40-23-47.640~~	~~73-59-09.034~~
~~024~~	~~SANDYHOOK LTHSE FINL~~	~~40-27-42.186~~	~~74-00-07.310~~
036	ROCKAWAY JETTY	40-32-25.190	73-56-26.826
037	ROMER SHOAL	40-30-46.822	74-00-48.676

Submitted by: Harrie W. Bonnah, ENS, NOAA
Survey Officer
NOAA Ship HECK

Reviewed by: Grady H. Tuell, LT, NOAA
Executive Officer
NOAA Ship HECK

L. LETTER OF APPROVAL

During the period AUGUST 4, 1989, to AUGUST 29, 1989, field operations contributing to the accomplishment of this survey were conducted under my direct supervision with frequent personal checks of progress and data quality. This report, field sheets, and data records have been closely reviewed and are complete and adequate for charting.

Stanley R. Iwamoto, LCDR, NOAA
Commanding Officer
NOAA Ship HECK

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: November 2, 1989

MARINE CENTER: Atlantic

OPR: C147-HE-89

HYDROGRAPHIC SHEET: FE-331SS

LOCALITY: Atlantic Ocean, Offshore, Monmouth Beach to Elberton, N.J.

TIME PERIOD: August 4- 29, 1989

TIDE STATION USED: 853 1680 Sandy Hook, N.J.

PLANE OF REFERENCE (MEAN LOWER LOW WATER): = 2.27 ft.

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: = 4.9 ft.

REMARKS: RECOMMENDED ZONING

Apply a x0.94 range ratio to all heights, and a -0 hr. 30 min. time correction.

James R Hubbard

CHIEF, TIDAL DATUM QUALITY ASSURANCE SECTION

NOAA FORM 76-155
(11-72)

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

SURVEY NUMBER

FE-331 SS

GEOGRAPHIC NAMES

Name on Survey	A ON CHART NO.	B ON PREVIOUS SURVEY NO.	C ON U.S. QUADRANGLE MAPS	D FROM LOCAL INFORMATION	E ON LOCAL MAPS	F P.O. GUIDE OR MAP	G RAND MCNALLY ATLAS	H U.S. LIGHT LIST	K	
ATLANTIC OCEAN (title)										1
ELBERON (title)										2
MONMOUTH BEACH (title)										3
NEW JERSEY (title)										4
										5
										6
										7
										8
										9
										10
										11
										12
										13
										14
										15
										16
				Approved:						17
				Charles E. Harrington						18
				Chief Geographer - N/CG2x5						19
										20
				MAY - 1 1991						21
										22
										23
										24
										25

NOAA FORM 76-155 SUPERSEDES C&GS 197

NOAA FORM 61-29 (12-71)

U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

REFERENCE NO.

N/CG244-49-91

LETTER TRANSMITTING DATA

DATA AS LISTED BELOW WERE FORWARDED TO YOU BY *(Check)*:

☐ ORDINARY MAIL ☐ AIR MAIL

☒ REGISTERED MAIL ☐ EXPRESS

☐ GBL *(Give number)* _____

TO:

Chief, Data Control Section, N/CG243
NOAA/National Ocean Service
Room 151, WSC-1
Rockville, MD 20852

DATE FORWARDED

8 July 1991

NUMBER OF PACKAGES

1 box

NOTE: A separate transmittal letter is to be used for each type of data, as tidal data, seismology, geomagnetism, etc. State the number of packages and include an executed copy of the transmittal letter in each package. In addition the original and one copy of the letter should be sent under separate cover. The copy will be returned as a receipt. This form should not be used for correspondence or transmitting accounting documents.

FE-331SS

New Jersey, Atlantic Ocean, Monmouth Beach to Elberon

Box:

1 Original Descriptive Report
10 Original page size Smooth Sheets inserted in the Descriptive Report
1 Cahier containing Position printout, and Control File Listing, Sounding printout, L-File
1 Envelope containing smooth position overlays and smooth excess overlays
1 Binder containing data removed from the original descriptive report
10 Envelope containing side scan sonargrams, daily data printout, and fathograms for the following JD's--VESNO 9140:
216, 219 no sonargrams, 220-221, 222 no sonargrams, 226 no sonargrams, 227, 227 no sonargrams, 229 no sonargrams, 241
1 Envelope containing supplemental data from printouts

FROM: *(Signature)*

Norris A. Wike

Return receipted copy to:

Atlantic Hydrographic Section, N/CG244
439 W. York Street
Norfolk, VA 23510-1114

RECEIVED THE ABOVE
(Name, Division, Date)

D. S. Clark
7/11/91

NOAA FORM 61-29 SUPERSEDES FORM C&GS 413 WHICH MAY BE USED.

☆U.S.GPO:1983-0-664-006/1192

07/03/91

HYDROGRAPHIC SURVEY STATISTICS
REGISTRY NUMBER: FE-331SS

NUMBER OF CONTROL STATIONS	9
NUMBER OF POSITIONS	330
NUMBER OF SOUNDINGS	1608

	TIME-HOURS	DATE COMPLETED
PREPROCESSING EXAMINATION	20	12/01/89
VERIFICATION OF FIELD DATA	73	05/30/90
ELECTRONIC DATA PROCESSING	22	
QUALITY CONTROL CHECKS	43	
EVALUATION AND ANALYSIS	73	06/21/91
FINAL INSPECTION	27	05/20/91
TOTAL TIME	258	

ATLANTIC HYDROGRAPHIC SECTION APPROVAL 07/03/91

COAST AND GEODETIC SURVEY
ATLANTIC HYDROGRAPHIC SECTION
EVALUATION REPORT

SURVEY NO.: FE-331SS FIELD NO.: HE-10-9-89

New Jersey, Atlantic Ocean, Offshore Monmouth Beach to Elberon

SURVEYED: 4 August through 29 August 1989

SCALE: 1:10,000 PROJECT NO.: OPR-C147-HE-89

SOUNDINGS: RAYTHEON DSF-6000N Fathometer, EG&G Model 260 Side Scan Sonar, Pneumatic Depth Gauge, Leadline

CONTROL: MOTOROLA Mini-Ranger Falcon 484 (Range/Range)

Chief of Party.....S. R. Iwamoto

Surveyed by.....G. H. Tuell
.....H. W. Bonnah
.....L. D. Weiner
.....D. S. Wilkes
.....M. Sramek

Automated Plot by.....XYNETICS 1201 Plotter (AHS)

1. INTRODUCTION

a. The purpose of this survey was to verify or disprove Automated Wreck and Obstruction Information System (AWOIS) items and contacts located by NOAA Ship WHITING during the 1988 field season.

b. This is a side scan sonar survey. A RAYTHEON DSF-6000N Fathometer was operated concurrently with the side scan sonar. No wire drag was accomplished during this survey.

c. Ten (10) 1:10,000 scale page size smooth plots were generated during office processing and are attached to this report.

d. No unusual problems were encountered during office processing.

e. Notes in the Descriptive Report were made in red during office processing.

2. CONTROL AND SHORELINE

a. Control is adequately discussed in sections H. and I. of the Descriptive Report.

Horizontal control used for this survey during data acquisition is based upon the North American Datum of 1983 (NAD 83). Office processing of this survey is based on these values. The smooth sheet has been annotated with ticks showing the computed mean shift between the survey datum and the North American Datum of 1927 (NAD 27). To place this survey on the NAD 27 datum move the projection lines 0.398 seconds (12.3 meters or 1.23 mm at the scale of the survey) north in latitude, and 1.508 seconds (35.6 meters or 3.56 mm at the scale of the survey) east in longitude.

b. There is no shoreline within the limits of the present survey.

3. HYDROGRAPHY

a. Where applicable, soundings at crossings are in excellent agreement and comply with the criteria found in sections 4.6.1 and 6.3.4.3. of the HYDROGRAPHIC MANUAL.

b. Where applicable, the standard or supplemental depth curves could be drawn in their entirety.

c. The development of the bottom configuration and determination of least depths of items located and shown on the smooth plots is considered adequate.

4. CONDITION OF SURVEY

The smooth sheet and accompanying overlays, hydrographic records and reports conform to the requirements of the HYDROGRAPHIC MANUAL and FIELD PROCEDURES MANUAL with the following exception:

During scanning of echograms by shipboard personnel soundings inserted were not inserted at the proper times. Field personnel chose to "slip" soundings by excessive amounts. This type of procedure could result in incorrect positioning of hazards or features found during the course of survey operations. The field unit should familiarize itself with the allowances for moving (slipping) inserted soundings in section 4.9.8.1., page 4-85, of the HYDROGRAPHIC MANUAL.

5. JUNCTIONS

There are no contemporary junctional surveys or junctional requirements in the Project Instructions.

6. COMPARISON WITH PRIOR SURVEYS

a. Hydrographic

H-10285 (1988)

The prior survey listed above covers the present survey area in its entirety. Additional work items from survey H-10285 (1988) were investigated by the present survey. A discussion of each item and charting recommendation can be found in section K., pages 13 through 95 of the Descriptive Report. The following should be noted:

1) AWOIS item #1531, a charted dangerous sunken wreck with a wire drag clearance of 42 feet and a danger curve, in Latitude 40°16'12"N, Longitude 73°56'30"W (NAD 27), originates with prior survey-6463WD (1939). The wreck was previously hung at a depth of 44 feet and subsequently cleared by a depth of 42 feet. An obstruction was located by prior survey H-10285 (1988), in Latitude 40°16'07.91"N, Longitude 73°56'35.20"W, with an estimated depth of 55 feet. This obstruction is contact #9 on the list of items to be investigated by the present survey. This obstruction is shown on prior survey H-10285 (1988) as a 55 *Obstr (A)*. The wreck was located by the present survey in Latitude 40°16'08.50"N, Longitude 73°56'34.18"W, and described as a dangerous sunken wreck with a pneumatic depth gauge least depth of 54 feet. It is recommended that the charted dangerous sunken wreck with a wire drag clearance of 42 feet and a danger curve, AWOIS item #1531, be deleted from the chart. The 55 *Obstr (A)* from H-10285 (1988) should not be charted. It is also recommended that a dangerous sunken wreck with a least depth of 54 feet (54 *Wk*), and a danger curve be charted in present survey location. See sheet 3 of 10.

2) AWOIS item #1538, a charted dangerous sunken wreck with a wire drag clearance of 42 feet and a danger curve, in Latitude 40°17'00"N, Longitude 73°57'00"W (NAD 27), originates with prior survey-6463WD (1939). The wreck was previously hung at a depth of 43 feet and subsequently cleared by a depth of 42 feet. An obstruction was located by prior survey H-10285 (1988), in Latitude 40°16'58.94"N, Longitude 73°56'49.71"W, with a fathometer depth of 47 feet. This obstruction is contact #12 on the list of items to be

investigated by the present survey. The obstruction is shown on prior survey H-10285 (1988) as a 47 *Obstr*. A rock was located by the present survey in Latitude 40°16'58.67"N, Longitude 73°56'49.31"W, and described as a dangerous submerged rock with a pneumatic depth gauge least depth of 46 feet. It is recommended that the charted dangerous sunken wreck with a wire drag clearance of 42 feet and a danger curve, AWOIS item #1538, be deleted from the chart. The 47 *Obstr* from H-10285 (1988) should not be charted. It is also recommended that a dangerous submerged rock with a least depth of 46 feet, (46 *Rk*), and a danger curve be charted in present survey location. See sheet 5 of 10.

3) AWOIS item #1543, a charted dangerous submerged obstruction with a wire drag clearance of 34 feet and a danger curve, in Latitude 40°18'24"N, Longitude 73°56'30"W (NAD 27), originates with prior survey H-6463WD (1939). The obstruction was previously hung at a depth of 36 feet and subsequently cleared by a depth of 34 feet. An obstruction was located by prior survey H-10285 (1988), in Latitude 40°18'23.30"N, Longitude 73°56'33.08"W, with an estimated depth of 41 feet. This obstruction is #8 on the list of items to be investigated by the present survey. The obstruction is shown on prior survey H-10285 (1988) as a 41 *Obstr (A)*. A rock was located by the present survey in Latitude 40°18'23.52"N, Longitude 73°56'32.14"W, and described as a dangerous submerged rock with a leadline least depth of 37 feet. It is recommended that the charted dangerous submerged obstruction with a wire drag clearance of 34 feet and a danger curve, AWOIS item #1543, be deleted from the chart. The 41 *Obstr (A)* from H-10285 (1988) should not be charted. It is also recommended that a dangerous submerged rock with a least depth of 37 feet, (37 *Rk*), and a danger curve, be charted in present survey location. See sheet 2 of 10.

4) AWOIS item #4288, a charted dangerous submerged rock with a wire drag clearance of 24 feet and a danger curve, in Latitude 40°16'48"N, Longitude 73°58'00"W (NAD 27), originates with prior survey H-6463WD (1939). The rock was previously hung at a depth of 26 feet and subsequently cleared by a depth of 24 feet. An obstruction was located by prior survey H-10285 (1988), in Latitude 40°16'42.60"N, Longitude 73°58'02.20"W, with an estimated depth of 22 feet. The obstruction is in the vicinity of the search area for contact #21 which is on the list to investigate. The obstruction is shown on prior survey H-10285 (1988) as a 22 *Obstr (A)*. An area with the following boundaries for contact #21 was investigated by the present survey.

Latitude (N)	Longitude (W)
40°16'54"	73°58'38"
40°16'54"	73°57'56"
40°16'34"	73°57'56"
40°16'34"	73°58'38"

Numerous rocks, in excess of 50, were evident on the fathograms submitted by the field unit in the area of investigation. The shoalest rock located by the present survey is in Latitude 40°16'44.38"N, Longitude 73°58'27.46"W, and described as a dangerous submerged rock with a fathometer depth of 24 feet. It is recommended that the dangerous submerged rock with a wire drag clearance of 24 feet and a danger curve, AWOIS item #4288, be deleted. The 22 *Obstr (A)* should not be charted. It is also recommended that a dangerous submerged rock with a depth of 24 feet, (24 *Rk*), and a danger curve be charted in present survey location. Additionally, the chart compiler will have to select specific rocks that are shown on the smooth plot for inclusion on future editions of the chart. Consideration should also be given to showing the shoalest rock located by the present survey and charting the bottom characteristic "*rky*" in the vicinity. See sheet 9 of 10.

5) AWOIS item #4289, a charted dangerous submerged rock with a wire drag clearance of 24 feet and a danger curve, in Latitude 40°16'48"N, Longitude 73°58'12"W (NAD 27), originates with prior survey H-6463WD (1939). The rock was previously a 29 foot grounding and subsequently cleared by a depth of 24 feet. An obstruction was located by prior survey H-10285 (1988), in Latitude 40°16'42.60"N, Longitude 73°58'11.10"W, with an estimated depth of 19 feet. The obstruction is in the vicinity of the search area for contact #21 which is on the list to be investigated by the present survey. The obstruction is shown on prior survey H-10285 (1988) as a 19 *Obstr (A)*. An area with the following boundaries for contact #21 was investigated by the present survey.

Latitude (N)	Longitude (W)
40°16'54"	73°58'38"
40°16'54"	73°57'56"
40°16'34"	73°57'56"
40°16'34"	73°58'38"

A rock was located by the present survey in Latitude

40°16'44.38"N, Longitude 73°58'27.46"W, and described as a dangerous submerged rock with a fathometer depth of 24 feet. It is recommended that the dangerous submerged rock with a wire drag clearance of 24 feet and a danger curve, AWOIS item #4289, be deleted. The 19 *Obstr (A)* should not be charted. It is also recommended that a dangerous submerged rock with a depth of 24 feet, (24 *Rk*), and a danger curve be charted in present survey location. See sheet 9 of 10.

6) AWOIS item #4291, a charted dangerous submerged rock with a depth of 40 feet, in Latitude 40°18'18.0"N, Longitude 73°57'00.0"W (NAD 27), originates with prior survey H-6463WD (1939). The dangerous submerged rock was a 40-ft sounding over boulders, obtained by prior survey H-6463WD (1939). A clearance depth over the rock was not obtained because of numerous lobster pots in the vicinity. An obstruction was located by prior survey H-10285 (1988), in Latitude 40°18'18.18"N, Longitude 73°56'55.22"W, with an estimated depth of 37 feet. This obstruction is contact #20 on the list of items to be investigated by the present survey. The obstruction is shown on prior survey H-10285 (1988) as a 37 *Obstr (A)*. A rock was located by the present survey in Latitude 40°18'16.00"N, Longitude 73°56'55.51"W, and described as a dangerous submerged rock with a depth of 40 feet. It is recommended that the charted dangerous submerged rock with a depth of 40 feet, AWOIS item #4291, be deleted. The 37 *Obstr (A)* from H-10285 (1988) should not be charted. It is also recommended that a dangerous submerged rock with a depth of 40 feet, (40 *Rk*), and a danger curve be charted in present survey location. See sheet 4 of 10.

The present survey is adequate to supersede the above prior survey in the common areas.

b. Wire Drag

H-6463WD (1939)

There are six (6) AWOIS items that originate with prior survey H-6463WD (1939) within the limits of this survey. AWOIS items #1531, #1538, #1543, #4288, 4289, and #4291 are adequately discussed in sections 6.a. of this report and the Descriptive Report. There are no conflicts between present survey depths and the effective depths shown on prior survey H-6463WD (1939).

The present survey is adequate to supersede the above prior survey within the common area.

7. COMPARISON WITH CHART 12324 (24th. Edition Nov. 15/86)
12326 (38th. Edition Feb. 22/86)

a. Hydrography

The charted hydrography originates with prior surveys and requires no discussion in this report.

The present survey is adequate to supersede the charted hydrography in the common areas.

b. Dangers to Navigation

There were no Dangers to Navigation submitted by the field unit. No dangers were discovered during office processing.

c. Aids to Navigation

There are no fixed aids to navigation within the limits of this survey.

8. COMPLIANCE WITH INSTRUCTIONS

This survey complies with the Project Instructions.

9. ADDITIONAL FIELD WORK

This is an adequate side scan sonar survey.

Leroy G. Cram
Senior Cartographic Technician
Verification of Field Data

Norris A. Wike
Cartographer
Evaluation and Analysis

APPROVAL SHEET
FE-331SS

Initial Approvals:

The completed survey has been inspected with regard to survey coverage, delineation of depth curves, development of critical depths, cartographic symbolization, and verification or disproval of charted data. The digital data have been completed and all revisions and additions made to the smooth sheet during survey processing have been entered in the magnetic tape record for this survey. Final control, position, and sounding printouts of the survey have been made. The survey records and digital data comply with NOS requirements except where noted in the Evaluation Report.

Robert G. Roberson Date: 3 July 1991
Robert G. Roberson
Chief, Evaluation and Analysis Team
Atlantic Hydrographic Section

I have reviewed the smooth sheet, accompanying data, and reports. This survey and accompanying digital data meet or exceed NOS requirements and standards for products in support of nautical charting except where noted in the Evaluation Report.

Christopher B. Lawrence Date: 3 July 1991
Christopher B. Lawrence, CDR, NOAA
Chief, Atlantic Hydrographic Section

****

Final Approval:

Approved: V. Austin Yeager Date: July 12, 1991
J Austin Yeager
Rear Admiral, NOAA
Director, Coast and Geodetic Survey

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Coast and Geodetic Survey
Rockville, Maryland 20852

JAN 16 1992

MEMORANDUM FOR: Captain Dean R. Seidel, NOAA
Chief, Hydrographic Surveys Branch

FROM: George K. Myers, Jr.
Chief, Standards Section

SUBJECT: Examination of Side Scan Sonar Survey FE-331 (1989) SS, New Jersey, Atlantic Ocean, Monmouth Beach to Elberon

Chief of Party..... S. R. Iwamoto
Field Unit..... NOAA ship HECK
Processed by..... Atlantic Hydrographic Processing Unit
Examined by..... G. K. Myers

An examination of side scan sonar survey FE-331 (1989) SS was accomplished to monitor the survey for adequacy with respect to data acquisition, conformance with applicable project instructions, search requirements, determination of least depths, navigational hazards, smooth plotting, decisions made and actions taken by the evaluator, and the cartographic presentation of data.

In general, the survey was found to conform to National Ocean Service standards and requirements except as stated in the Evaluation Report.

cc: N/CG244 - C. Lawrence

73° 53' 00"

73° 52' 30"

73° 52' 00"

40° 17' 00"

40° 16' 30"

69 Obstr (two locomotives)

73° 52' 00"

NAD 27

40° 16' 00"

XYNETICS 1201

40° 16' 00"

✓ LGC 5/14/90

FE-331 SS

NEW JERSEY, ATLANTIC OCEAN

OFFSHORE MONMOUTH BEACH TO ELBERON

DATE OF SURVEY: 29 AUG 1989

SCALE: 10,000

SOUNDINGS IN FEET AT MLLW

SHEET 1 OF 10

CONTACT NO. 2

73° 57' 00"

73° 56' 30"

73° 56' 00"
40° 19' 00".

40° 18' 30".

37 Rk

73° 56' 30"

NAD 27 40° 18' 00"

XYNETICS 1201
LGC 5/15/90

40° 18' 00"

FE-331SS
NEW JERSEY, ATLANTIC OCEAN
OFFSHORE MONMOUTH BEACH TO ELBERON
DATE OF SURVEY: 15-17 AUG 1989
SCALE: 10,000
SOUNDINGS IN FEET AT MLLW
SHEET 2 OF 10
CONTACT NO. 8

73° 57' 00"

73° 56' 30"

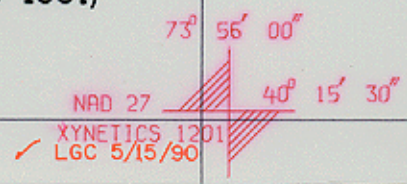
73° 56' 00"

40° 16' 30"

54 Wk

40° 16' 00"

FE-331SS
NEW JERSEY, ATLANTIC OCEAN
OFFSHORE MONMOUTH BEACH TO ELBERON
DATE OF SURVEY : 10 AUG 1989
SCALE: 10,000
SOUNDINGS IN FEET AT MLLW
SHEET 3 OF 10
CONTACT NO. 9 (AWOIS 1531)



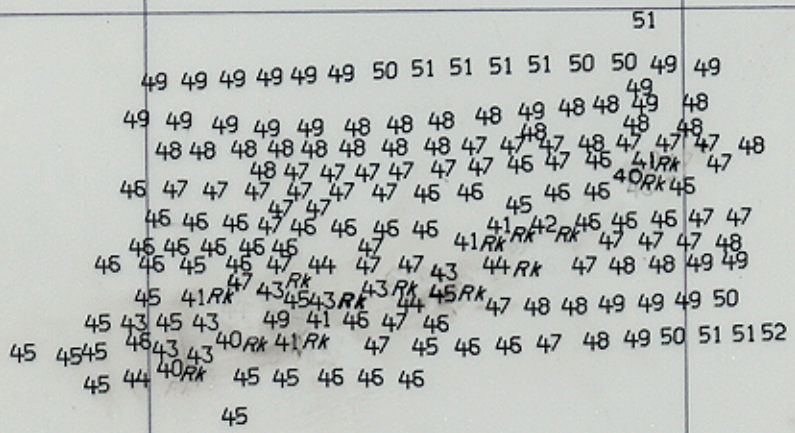
73° 57' 00"

73° 56' 30"

73° 56' 00"

40° 19' 00"

40° 18' 30"



40° 18' 00"

73° 56' 30"

NAD 27

40° 18' 00"

XYNETICS 1201

LGC 5/15/90

FE-331 SS

NEW JERSEY, ATLANTIC OCEAN

OFFSHORE MONMOUTH BEACH TO ELBERON

DATE OF SURVEY : 15 AUG 1989

SCALE: 10,000

SOUNDINGS IN FEET AT MLLW

SHEET 4 OF 10

CONTACT NOS. 11 & 20

73° 57' 30"

73° 57' 00"

73° 56' 30"

40° 17' 30"

40° 17' 00"

46Rk

73° 56' 30"

NAD 27 40° 16' 30"

XYNETICS 1201

✓ LGC 5/16/90

40° 16' 30"

FE-331 SS

NEW JERSEY, ATLANTIC OCEAN

OFFSHORE MONMOUTH BEACH TO ELBERON

DATE OF SURVEY : 9 AUG 1989

SCALE: 10,000

SOUNDINGS IN FEET AT MLLW

SHEET 5 OF 10

CONTACT NO. 12

73° 58' 30"

73° 58' 00"

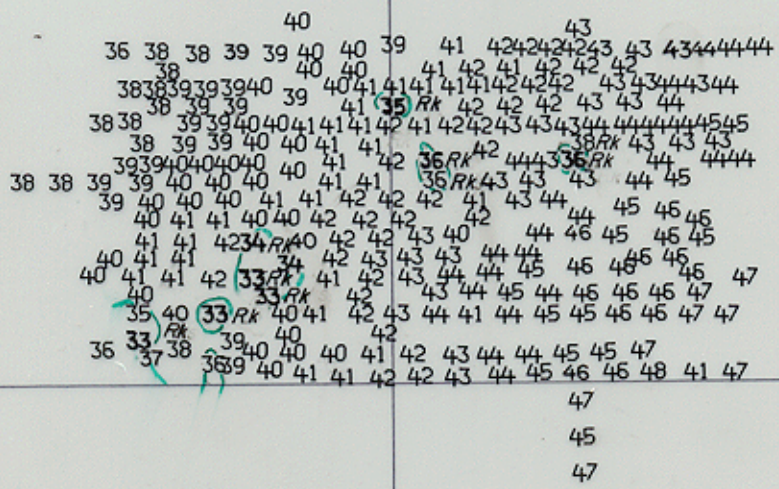
73° 57' 30"

73° 57' 30"

NAD 27 40° 17' 30"

XYNETICS 1201

LGC 5/16/90



40° 17' 00"

FE-331 SS

NEW JERSEY, ATLANTIC OCEAN

OFFSHORE MONMOUTH BEACH TO ELBERON

DATE OF SURVEY: 14-15 AUG 1989

SCALE: 10,000

SOUNDINGS IN FEET AT MLLW

SHEET 6 OF 10

CONTACT NO. 13

40° 16' 30"

73° 58' 30"

73° 58' 00"

73° 57' 30"

40° 18' 30"

40° 18' 00"

33 Rk

73° 57' 30"

NAD 27

40° 17' 30"

XYNETICS 1201

/LGC 5/17/90

40° 17' 30"

FE-331 SS

NEW JERSEY, ATLANTIC OCEAN

OFFSHORE MONMOUTH BEACH TO ELBERON

DATE OF SURVEY: 10 AUG 1989

SCALE: 10,000

SOUNDINGS IN FEET AT MLLW

SHEET 7 OF 10

CONTACT NO. 17

73° 57' 30"

73° 57' 00"

73° 56' 30"

40° 20' 00"

40° 19' 30"

40 Wk (steel)

73° 57' 00"

NAD 27 40° 19' 00"

XYNETICS 1201

LGC 5/16/90

40° 19' 00"

FE-331SS

NEW JERSEY, ATLANTIC OCEAN

OFFSHORE MONMOUTH BEACH TO ELBERON

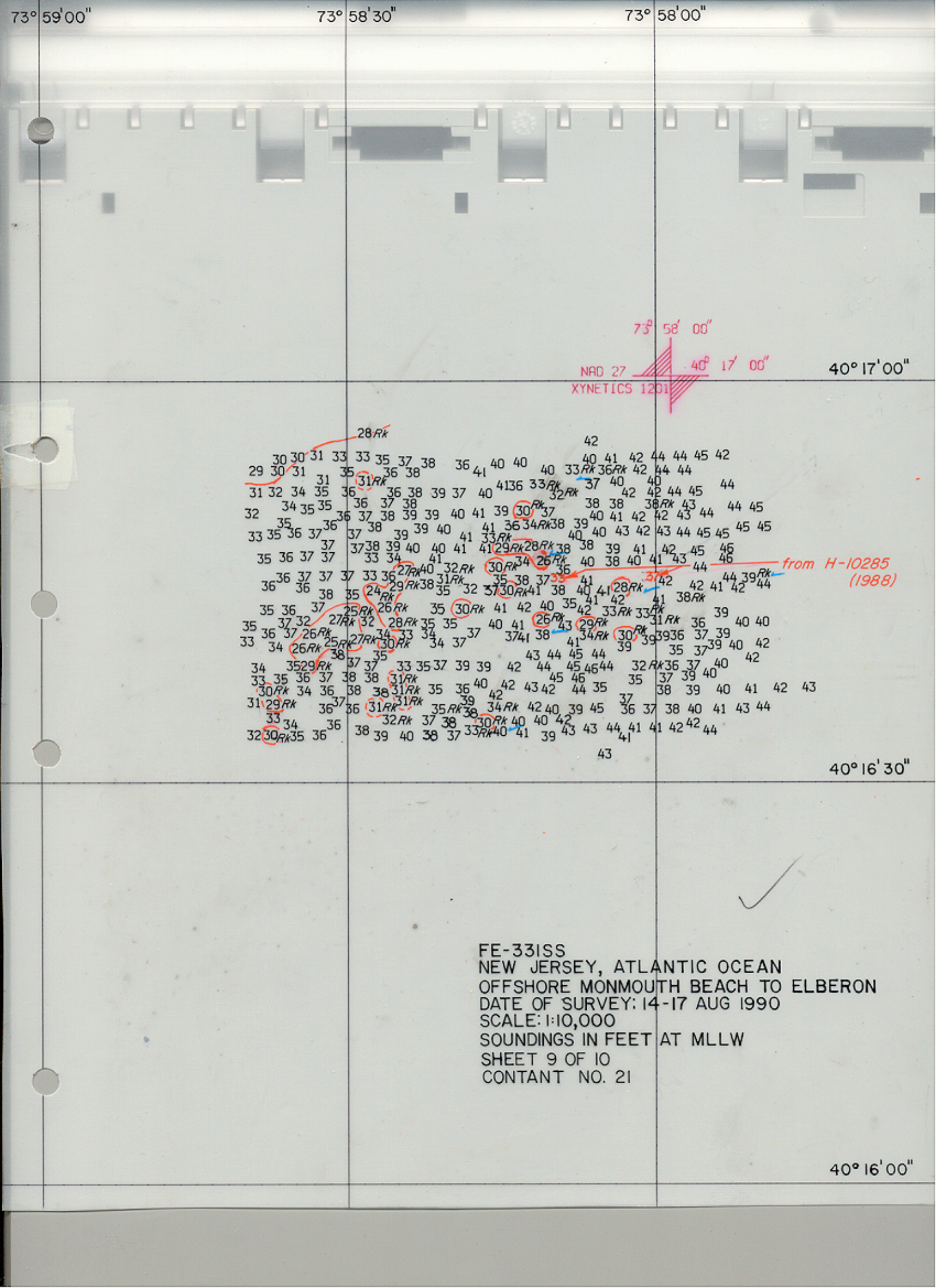
DATE OF SURVEY: 04 AUG 1989

SCALE: 10,000

SOUNDINGS IN FEET AT MLLW

SHEET 8 OF 10

CONTACT NO. 19



FE-331SS
NEW JERSEY, ATLANTIC OCEAN
OFFSHORE MONMOUTH BEACH TO ELBERON
DATE OF SURVEY: 14-17 AUG 1990
SCALE: 1:10,000
SOUNDINGS IN FEET AT MLLW
SHEET 9 OF 10
CONTANT NO. 21

73° 57′ 00″ 73° 56′ 30″ 73° 56′ 00″

60
61
61
61
60
59
58 59 61 63 62 64 63
59
58
59
58

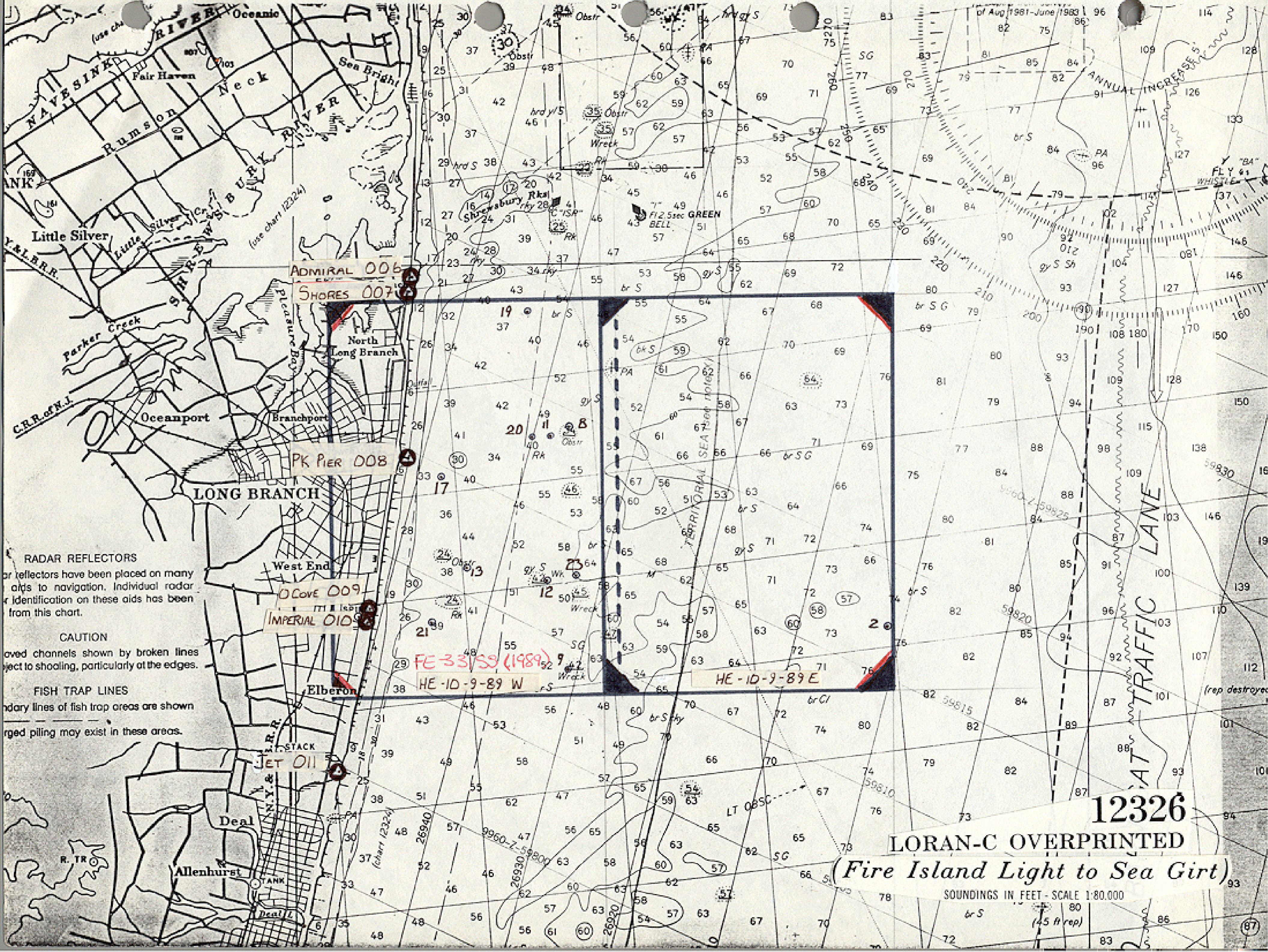
73° 56′ 00″
40° 17′ 00″
NAD 27
XYNETICS 1201
NAW 5/9/1991

40° 17′ 00″

40° 16′ 30″

FE-331SS
NEW JERSEY, ATLANTIC OCEAN
OFFSHORE MONMOUTH BEACH TO ELBERON
DATE OF SURVEY: 14-17 AUGUST 1990
SCALE: 10,000
SOUNDINGS IN FEET AT MLLW
SHEET 10 OF 10
CONTACT NO. 23

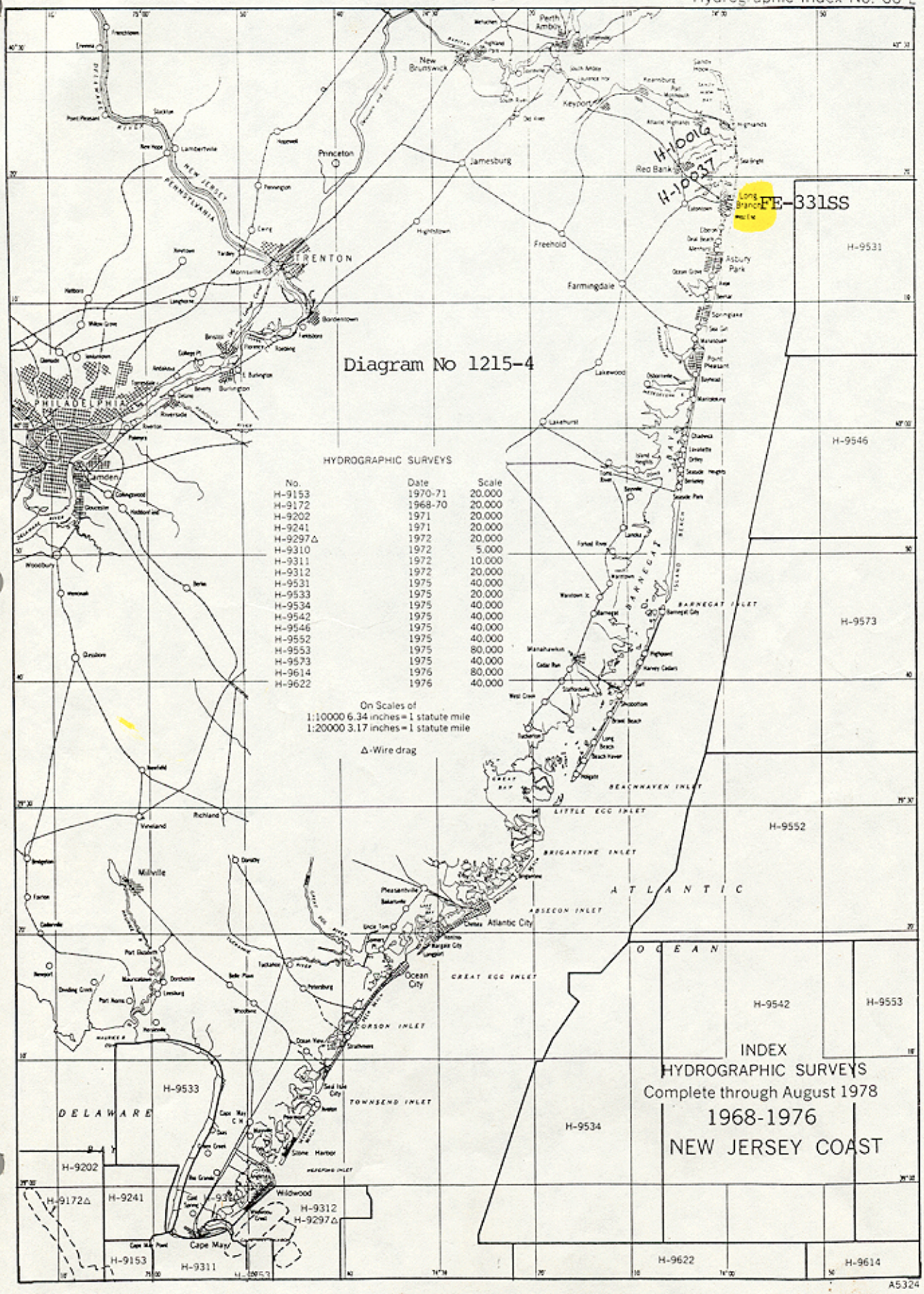
40°16′00″



12326
LORAN-C OVERPRINTED
(Fire Island Light to Sea Girt)
SOUNDINGS IN FEET - SCALE 1:80,000
ADMIRAL 006
SHORES 007
PK PIER 008
O COVE 009
IMPERIAL 010
JET 011
FE-33159 (1989)
HE-10-9-89 W
HE-10-9-89 E
RADAR REFLECTORS
CAUTION
FISH TRAP LINES
LONG BRANCH
North Long Branch
Oceanport
Branchport
West End
Elberon
Deal
Allenhurst
Little Silver
Rumson
Fair Haven
Oceanic
Sea Bright
NAVESINK RIVER
SHREWSBURY RIVER
Parker Creek
TERRITORIAL SEA
TRAFFIC LANE
ANNUAL INCREASE

DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Survey
Rockville, Maryland

Hydrographic Index No. 66 L



NOAA FORM 75-96
(10-83)

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

MARINE CHART BRANCH

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. FE-331SS

INSTRUCTIONS

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart.
1. Letter all information.
2. In "Remarks" column cross out words that do not apply.
3. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

CHART	DATE	CARTOGRAPHER	REMARKS
12324	12/1/92	L. Ackerman	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 27
12326	12/1/92	L. Ackerman	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 56
12300	1/22/93	J. Barber	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 56 APP'd thru cht 12326
13003	5-13-93	Roy A. Diamond	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. #63 N/C CHART SCALE
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.

SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED.